

**TM 5-3610-259-14**

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TECHNICAL MANUAL

**OPERATOR'S, ORGANIZATIONAL, DIRECT  
SUPPORT AND GENERAL SUPPORT  
MAINTENANCE MANUAL**

**TOPOGRAPHIC SUPPORT SYSTEM  
PLATE PROCESS SECTION**

**MODEL ADC-TSS-19**

**NSN: 3610-01-105-1743**

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**HEADQUARTERS, DEPARTMENT OF THE ARMY**

**1 AUGUST 1986**



CHANGE

NO. 3

HEADQUARTERS  
DEPARTMENT OF THE ARMY  
WASHINGTON, D. C., 1 March 1991

Operator's, Organizational, Direct Support and General Support  
Maintenance Manual

**TOPOGRAPHIC SUPPORT SYSTEM  
PLATE PROCESS SECTION  
MODEL ADC-TSS-19  
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**Operator's, Organizational, Direct Support and General Support  
Maintenance Manual  
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MODEL ADC-TSS-19  
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Operator's, Organizational, Direct  
Support and General Support  
Maintenance Manual

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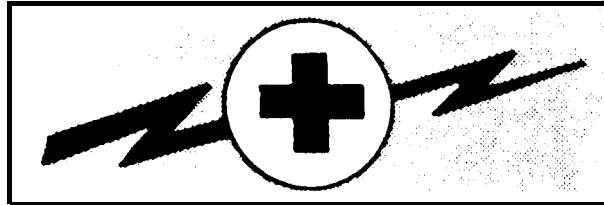
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**WARNING****WARNING****DEATH OR SERIOUS INJURY**

**HIGH VOLTAGE** is used in equipment. **DEATH ON CONTACT** or severe injury may result if personnel fail to observe precautions.

Do not be misled by the term **LOW VOLTAGE**. Low voltage can cause **serious injury or DEATH**.

Test procedures requiring the operator or maintenance personnel to investigate equipment or restore casualties with interlocks disconnected or covers removed may result in **DEATH ON CONTACT** if personnel fail to observe precautions.

Voltages in switches and circuit breaker panels may result in **DEATH ON CONTACT** if personnel fail to observe safety precautions.

Failure to ground the Section or equipment may result in **DEATH ON CONTACT** if personnel fail to observe safety procedures.

For artificial respiration refer to FM 21-11.

**WARNING**

Dry cleaning solvent, P-D-680, used to clean parts is potentially dangerous to personnel and property. Avoid repeated and prolonged skin contact. Wear solvent impermeable gloves and eye/face protective equipment when using solvent. Do not use near open flame or excessive heat. Flash point of solvent is 100°F to 138°F (38°C to 59°).

**WARNING**

Attempting to move heavy equipment that is unsecured may result in **SEVERE PERSONAL INJURY**. Always have sufficient personnel and equipment to accomplish the task.



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No. 5-3610-259-14

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WASHINGTON, D. C., 1 August 1986

Operator's, Organizational, Direct Support  
and General Support Maintenance Manual

TOPOGRAPHIC SUPPORT SYSTEM  
PLATE PROCESS SECTION  
MODEL ADC-TSS-19  
NSN: 3610-01-105-1743

**REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS**

You can help improve this manual. If you find any mistakes or if you know of away to improve tie, procedures, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to Publications and BlankForms),or DA Form 2028-2 located in the back of this manual directly to: US Army Troop Support Command, ATTN: AMSTR-MMTS, 4300 Goodfellow Blvd., St. Louis, MO 63120-1798. A reply will be finished to you.

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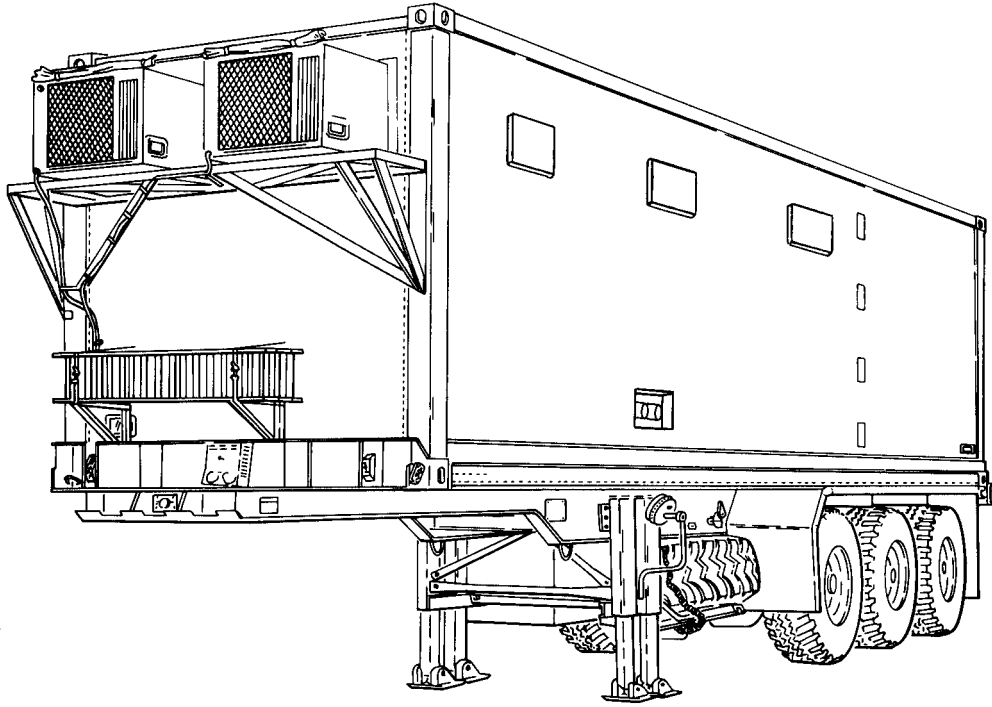
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## CHAPTER 1

### PLATE PROCESS SECTION

#### Section I. INTRODUCTION

##### 1.1.1 GENERAL INFORMATION

1.1.1.1 SCOPE. This manual contains operating and maintenance instructions for the ADC-TSS-19, Plate Process Section, Topographic Support System (TSS). The purpose of the Plate Process Section is to provide lithographic printing plates in support of the Press Section and to process color proofs and support material. The trailer chassis is covered in TM 5-2330-305-14, Operator's, Organizational, Direct Support and General Support Maintenance Manual, Topographic Support System, Chassis, Semitrailer, ISO Container Transporter. Repair parts and special tools are listed in TM 5-3610-259-24P, Organizational, Direct Support and General Support Maintenance Repair Parts and Special Tools List, Plate Process Section, Topographic Support System. Lubrication instructions are contained in LO 5-3610-259-12, Lubrication Order, Plate Process Section, Topographic Support System. All authorized equipment, supplies, and their locations for transport are shown in Location and Description of Major Components (para 1.1.2.2).

1.1.1.2 MAINTENANCE FORMS AND RECORDS. Department of the Army forms and procedures used for equipment maintenance will be those prescribed by DA Pam 738-750, The Army Maintenance Management System (TAMMS).

1.1.1.3 REPORTING EQUIPMENT IMPROVEMENTS (EIR's). If the Plate Process Section needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you do not like about your equipment. Let us know why you do not like the design or performance. Put it on an SF 368 (Quality Deficiency Report). Mail it to us at: US Army Troop Support Command, ATTN: AMSTR-MOF, 4300 Goodfellow Blvd, St Louis, MO 63120-1798. We will send you a reply.

1.1.1.4 DESTRUCTION OF MATERIEL TO PREVENT ENEMY USE. For information on destruction of materiel to prevent enemy use, refer to TM 750-244-3, Procedures for Destruction of Equipment to Prevent Enemy Use.

1.1.1.5 PREPARATION FOR STORAGE OR SHIPMENT. Perform the Preparation for Movement procedures. In the event individual items of equipment must be removed from the Section for repair or replacement, contact your battalion for packing and shipping instructions (para 1.4.6).

1.1.1.6 HAND RECEIPT (-HR) MANUAL. This manual has a companion document with a TM number followed by "-HR" (which stands for Hand Receipt). TM 5-3610-259-14-HR consists of preprinted hand receipts (DA Form 2062) that list end item-related equipment (i.e., Components of End Item, Basic Issue Items, and Additional Authorization Items) for which you must account. As an aid to property accountability, additional -HR manuals may be requisitioned from the following source in accordance with procedures in chapter 3, AR 310-2: The US Army Adjutant General Publications Center, 2800 Eastern Blvd, Baltimore, MD 21220.

## 1.1.2 EQUIPMENT DESCRIPTION AND DATA

### 1.1.2.1 EQUIPMENT PURPOSE, CAPABILITIES, AND FEATURES

#### Purpose

To provide lithographic printing plates in support of the Press Section and to process color proofs and cartographic support material.

#### Capabilities and Features

Transportable when mounted on trailer chassis using General Support transportation unit truck/tractor.

Air and sea transportable.

Limited cross-country capability when mounted on trailer chassis.

Controlled internal environment.

#### Special Considerations

Site must permit Section to be leveled within  $\pm$ one half division on level indicator, be well drained, and provide adequate overhead concealment.

Dispersal of topographic sections is limited to the length of electric power transmission cable available for unit generators.

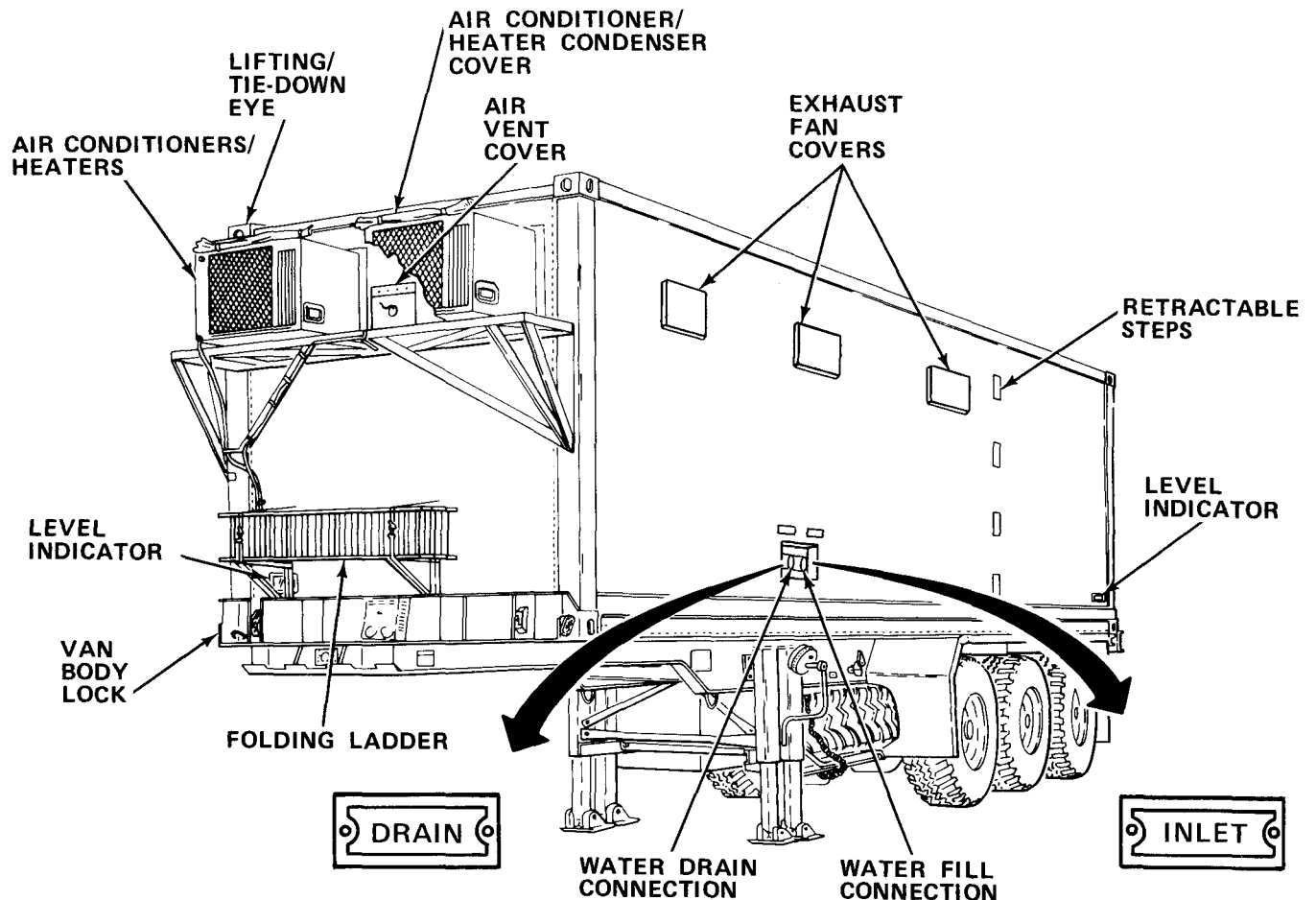
During site selection, avoid overhead power transmission lines to prevent danger from electric shock or electromagnetic interference.

Power is normally supplied by 60 kw generators. Commercial electric power should be used if it is compatible and available.

Cross-country capability of sections and transporters is limited. Relocation should be accomplished over hard-surfaced, all-weather roads whenever possible.

1. 1. 2. 2 LOCATION AND DESCRIPTION OF MAJOR COMPONENTS

a. Roadside Exterior



VAN BODY LOCK. Locks van body to trailer chassis.

AIR CONDITIONERS/HEATERS. Two air conditioner/heater units for internal environmental control.

LIFTING/TIE-DOWN EYE. Attachment point for lifting or tying down van body.

AIR CONDITIONER/HEATER CONDENSER COVER. Covers air conditioner/heater condenser to prevent water/air from entering air conditioner/heater unit when in transport or storage.

AIR VENT COVER. Covers air vent opening.

EXHAUST FAN COVER. Covers exhaust fan opening.

RETRACTABLE STEPS. Provide access to roof.

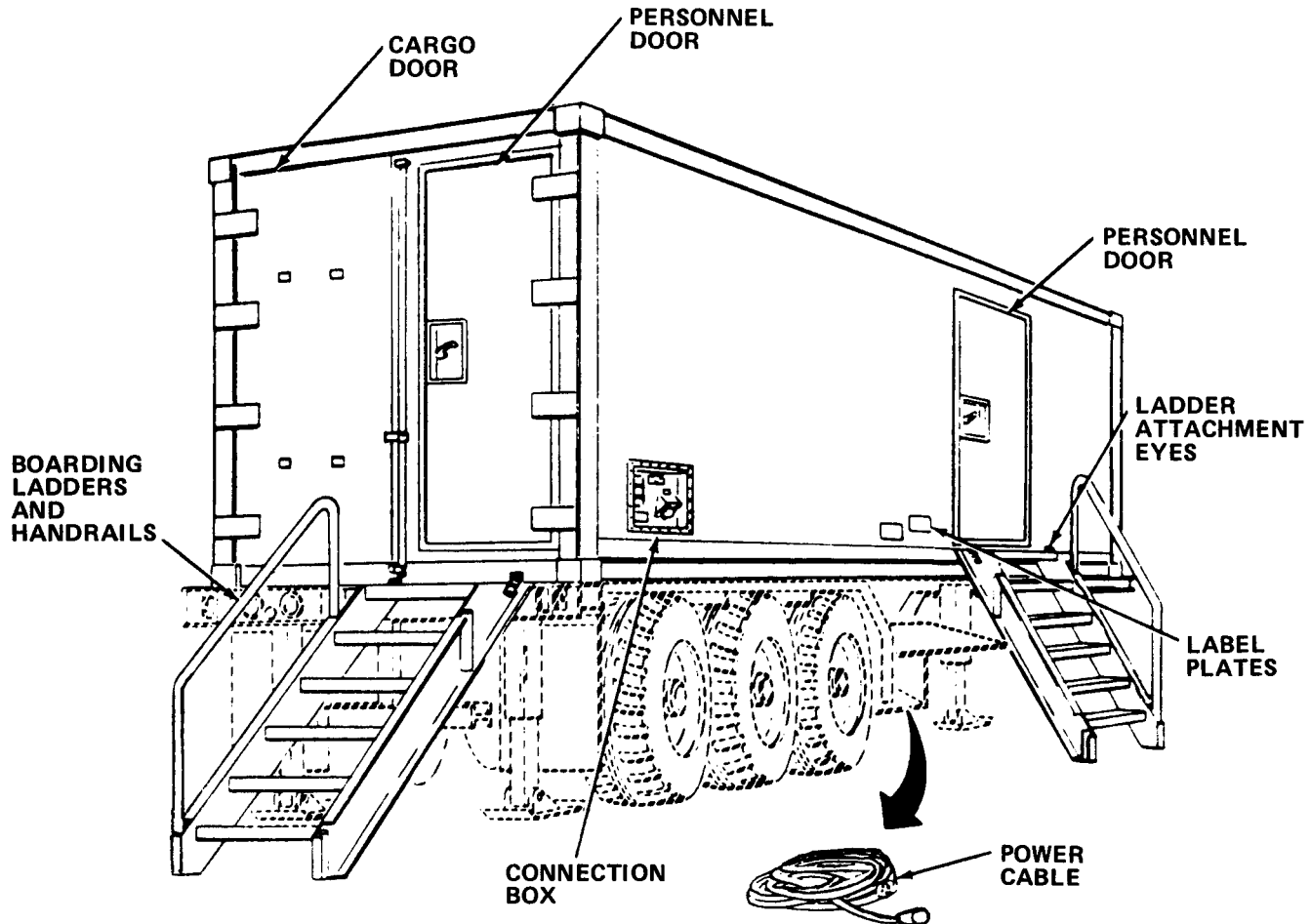
LEVEL INDICATOR. Indicates van body inclination.

WATER FILL CONNECTION. Fitting to fill water tank.

WATER DRAIN CONNECTION. Fitting to drain water tank.

FOLDING LADDER. Provides additional access to roof.

b. Curbside Exterior



CARGO DOORS. Access for equipment installation/removal.

PERSONNEL DOORS. Door is 26.75 in. (0.68m) wide by 70.5 in. (1.79m) high.

BOARDING LADDERS AND HANDRAILS. Provide access to van body.

LADDER ATTACHMENT EYES. Attachment points for boarding ladders.

LABEL PLATES. Weight/moment data.

POWER CABLE. Power cable is in 50 ft (15.2 m) sections. (Stored in trailer chassis storage box.)

CONNECTION BOX. Contains terminals for grounding cable, power cables, and telephone lines.

C. Interior

PERSONNEL DOOR. Weatherproof door fitted with blackout switch.

BLACKOUT SWITCH. Turns white ceiling lights off when activated.

FIRST AID KIT. Contains limited first aid supplies.

CARGO DOOR. Access for equipment installation/removal.

TOOL KIT. Storage box for authorized tools.

WATER TANK. Storage for photochemical water supply.

EXHAUST FANS. Provide ventilation. Fitted with lightproof louvers and weatherproof covers.

SINK. Work station for development and washing of plates.

DISPENSER PAPER TOWEL. Provides accessibility to paper towels.

BLACKOUT LIGHT. Red-lensed, 12 vac light actuated when blackout switch operates.

DOME LIGHT. White-lensed, 12 vdc light powered from external power source.

FLUORESCENT CEILING LIGHT. White, two-level (high/low) overhead light.

PHOTOLITHOGRAPHIC STORAGE CABINET. Storage for platemaking supplies (ten-drawer).

VACUUM CLEANER. Used for cleaning van equipment.

GLASS HOLDER. Storage for spare glass.

AIR CONDITIONERS/HEATERS. Internal environmental control.

EMERGENCY LIGHTS. Battery-powered lighting actuated by power failure.

AIR VENT. Permits filtered make-up air to enter van body.

PIN REGISTER BOARD. Punches photographic plates for press alignment.

BLACKOUT CURTAIN. Lightproof cover for personnel door.

CORKBOARD. Display area.

WALL STORAGE CABINET. Storage.

RIFLE RACK. Weapon storage.

CIRCUIT BREAKER PANEL. Circuit breakers with phase test indicator.

SAFETY SWITCH. Main power safety disconnect switch.

GROUND ROD AND CABLE . Provides electrical ground when equipment is in use.

LITHOGRAPHIC PLATE RACK. Rack to store photolithographic plates.

PHOTOLITHOGRAPHIC SUPPLY STORAGE CABINET. Used for storing photolithographic supplies (one-drawer).

ROTARY DRAFTING CHAIR. Adjustable-height chair.

FIRE EXTINGUISHER. Dry-chemical fire extinguisher.

WASTEPAPER BASKET. Refuse container.

FLIP/TOP PLATEMAKER. Exposure device for photolithographic platemaking.

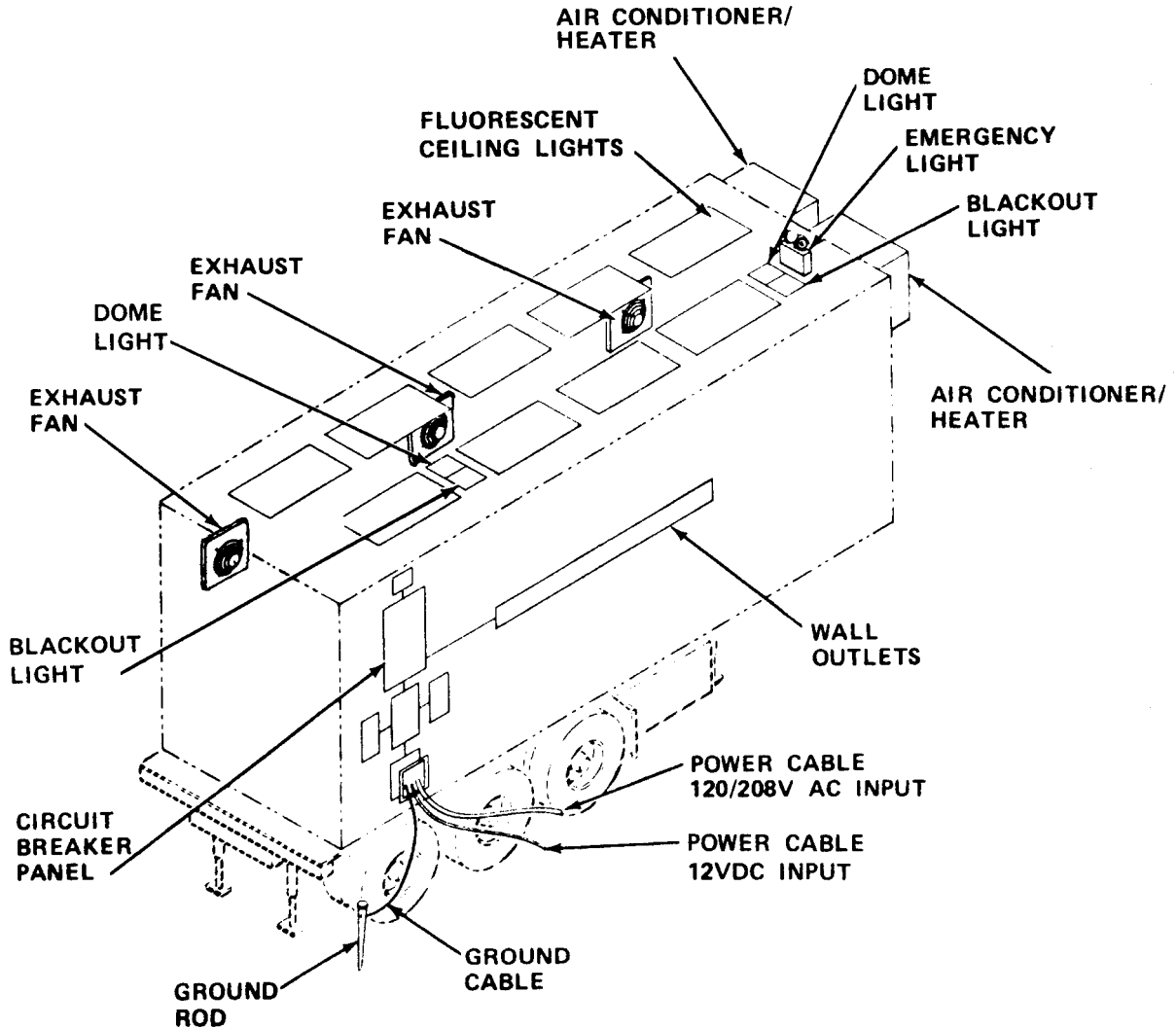
PLATE FINISHING TABLE. Work surface for drying and completion of plate processing.

DRAFTING, SCRIBING/TRACING TABLE. Illuminated tracing board. Turns over for drafting board.

### 1.1.3 TECHNICAL PRINCIPLES OF OPERATION

1.1.3.1 GENERAL. The operation of individual equipment is explained in the appropriate chapter.

#### 1.1.3.2 ELECTRICAL SYSTEM

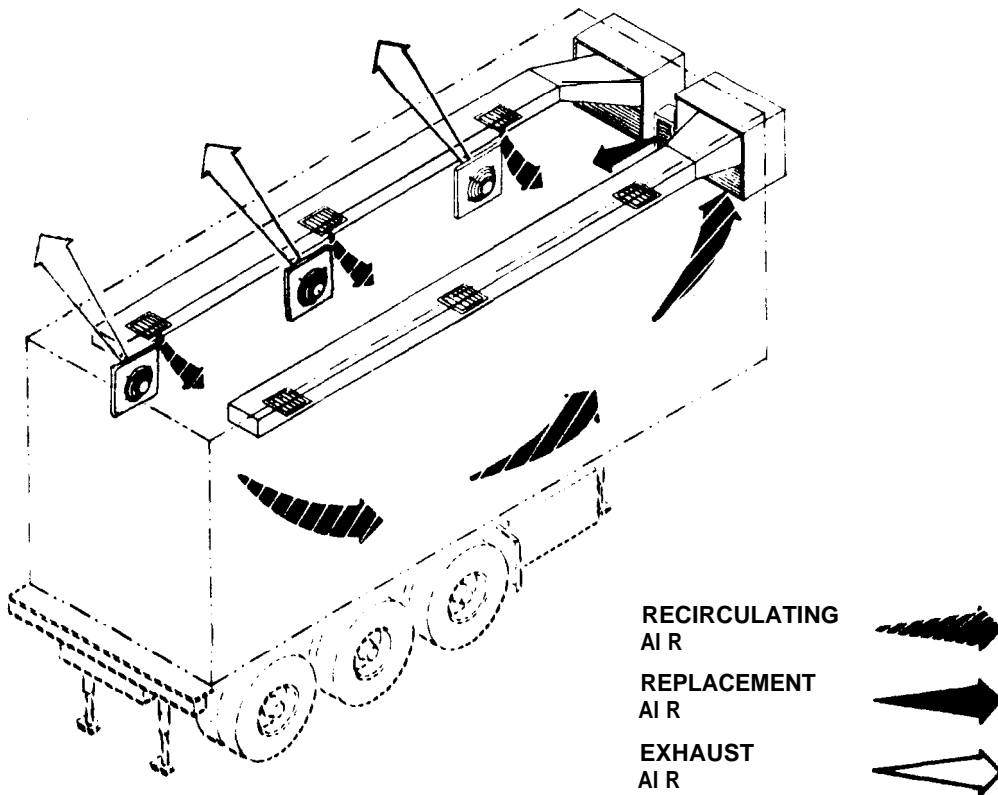


- a. Ground Rod. Used to ground van body.
- b. Ground Cable. Used with ground rod.
- c. Circuit Breaker Panel. Contains voltage indicator, phase monitor, and fifteen 50 amp circuit breakers.
- d. Wall Outlets. Provide grounded outlets for portable or plug-in equipment.
- e. Dome Lights. White-lensed, 12 vdc lights powered from external source. Plug in to operate. Separately switched and fused.
- f. Exhaust Fans. Plug-in. Three units, separately fused.

- g. Fluorescent Ceiling Lights. Two-level (high/low) overhead lights with blackout override switches.
- h. Emergency Lights. Battery-powered. Activated by power loss.
- i. Air Conditioner/Heater. Air conditioner and electrical heater powered by three-phase, 208 v, 30 amp current.
- j. Blackout Lights. Red-lensed, 12 vac lights actuated when blackout switch operates.
- k. Power Cables. (120/208 vac and 12 vdc.) Power input.

1. 1. 3. 3 WIRING DIAGRAM. A foldout wiring diagram is provided at the end of this manual.

1. 1. 3. 4 VENTILATION SYSTEM

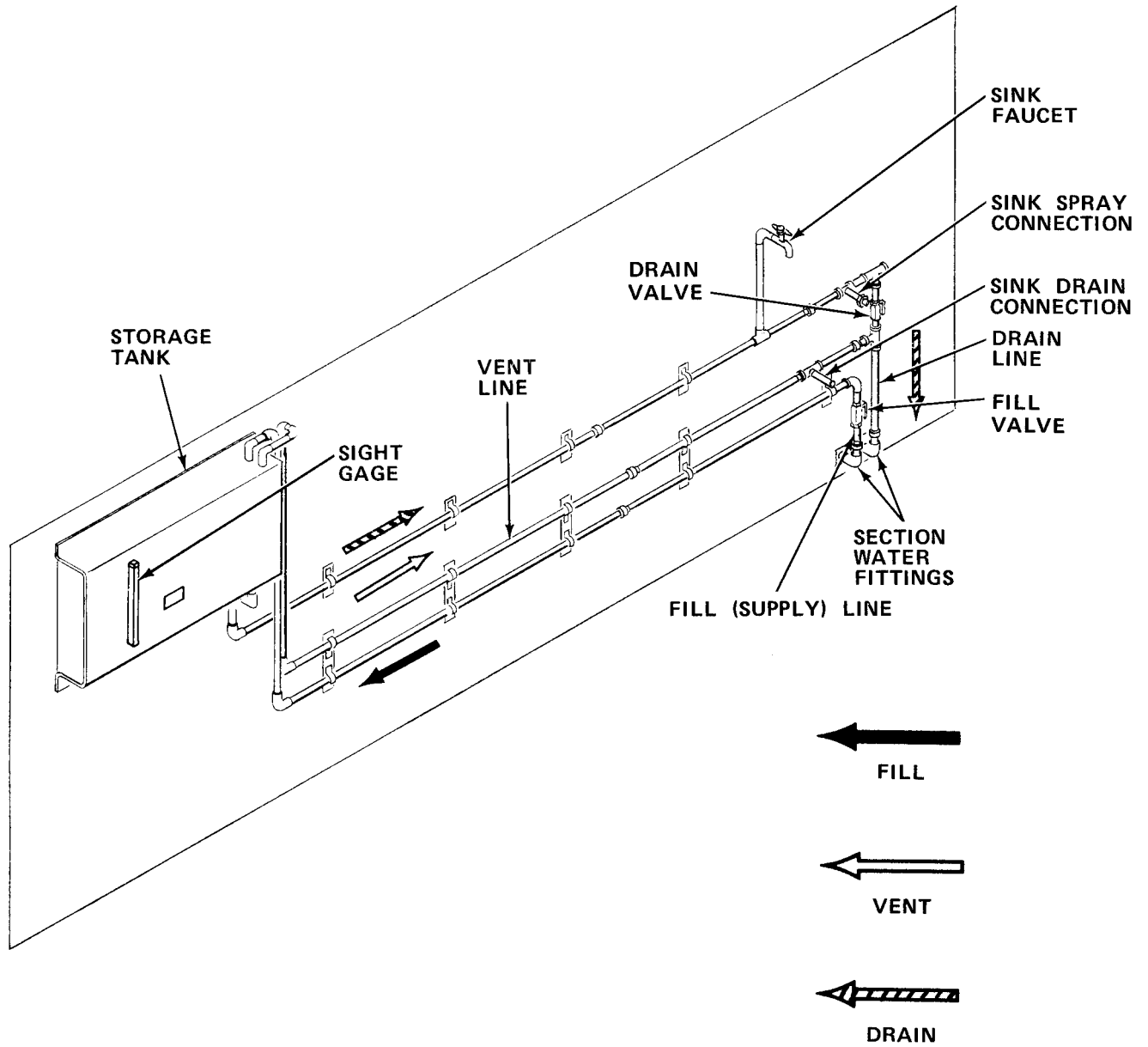


Exhaust fans exhaust air. Replacement air flows into the van body through the air vent filter. Recirculating air is filtered as it enters the air conditioners/heaters. From the air conditioners/heaters, it flows through the ceiling vents and into the van body.

Detailed description of air conditioner/heater operation is contained in TM 5-4120-367-14, Operator's Organizational, Direct Support, and General Support Maintenance Manual, Air Conditioner, Horizontal, Compact, 18,000 BTU/hr Cooling, and TM 5-4120-367-24P, Organizational, Direct Support, and General Support Maintenance Repair Parts and Special Tools List (Including Depot Maintenance Repair) for Air Conditioner, Horizontal, Compact, 18,000 BTU/hr cooling.

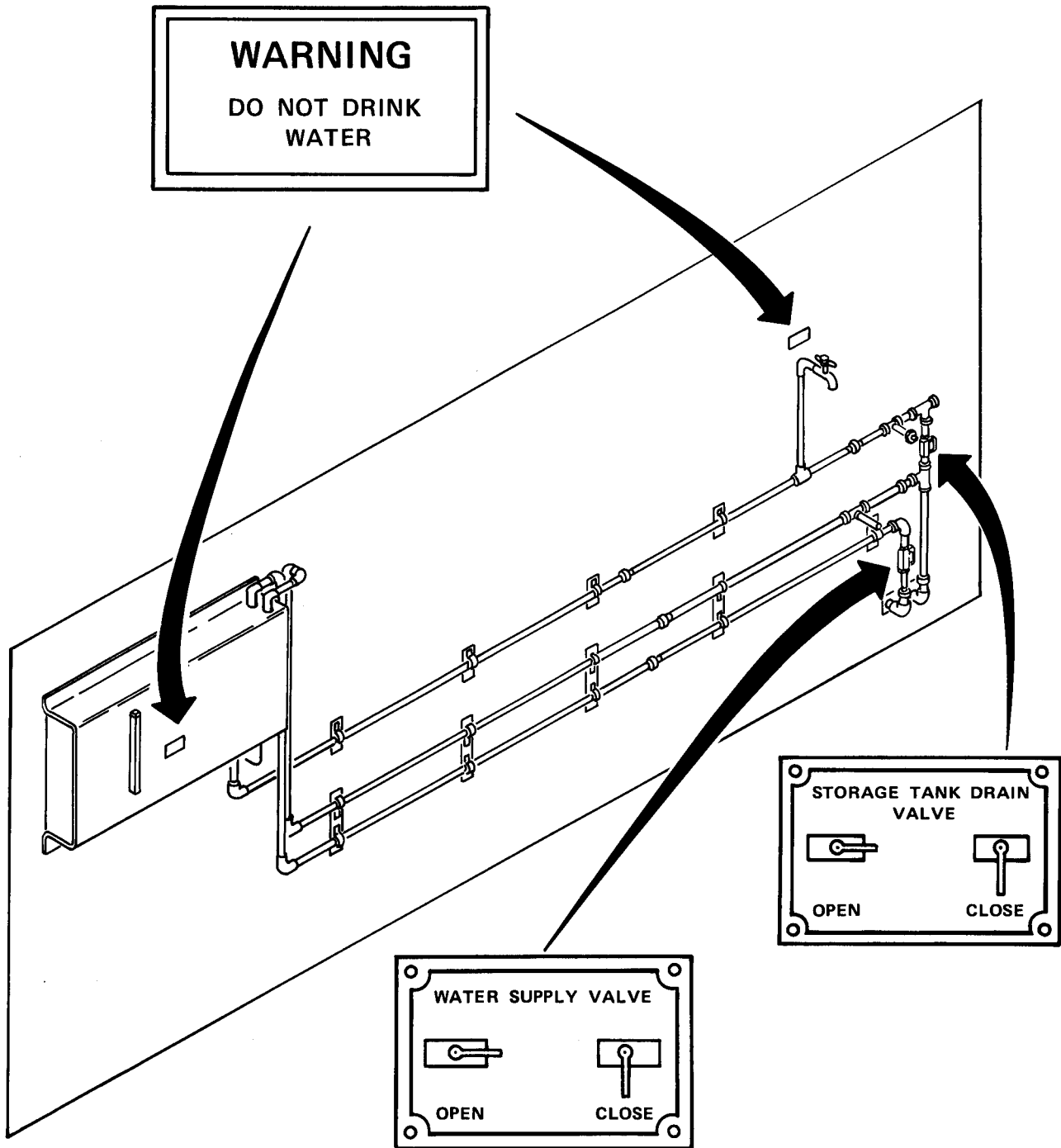


1. 1. 3. 5 WATER SYSTEM.



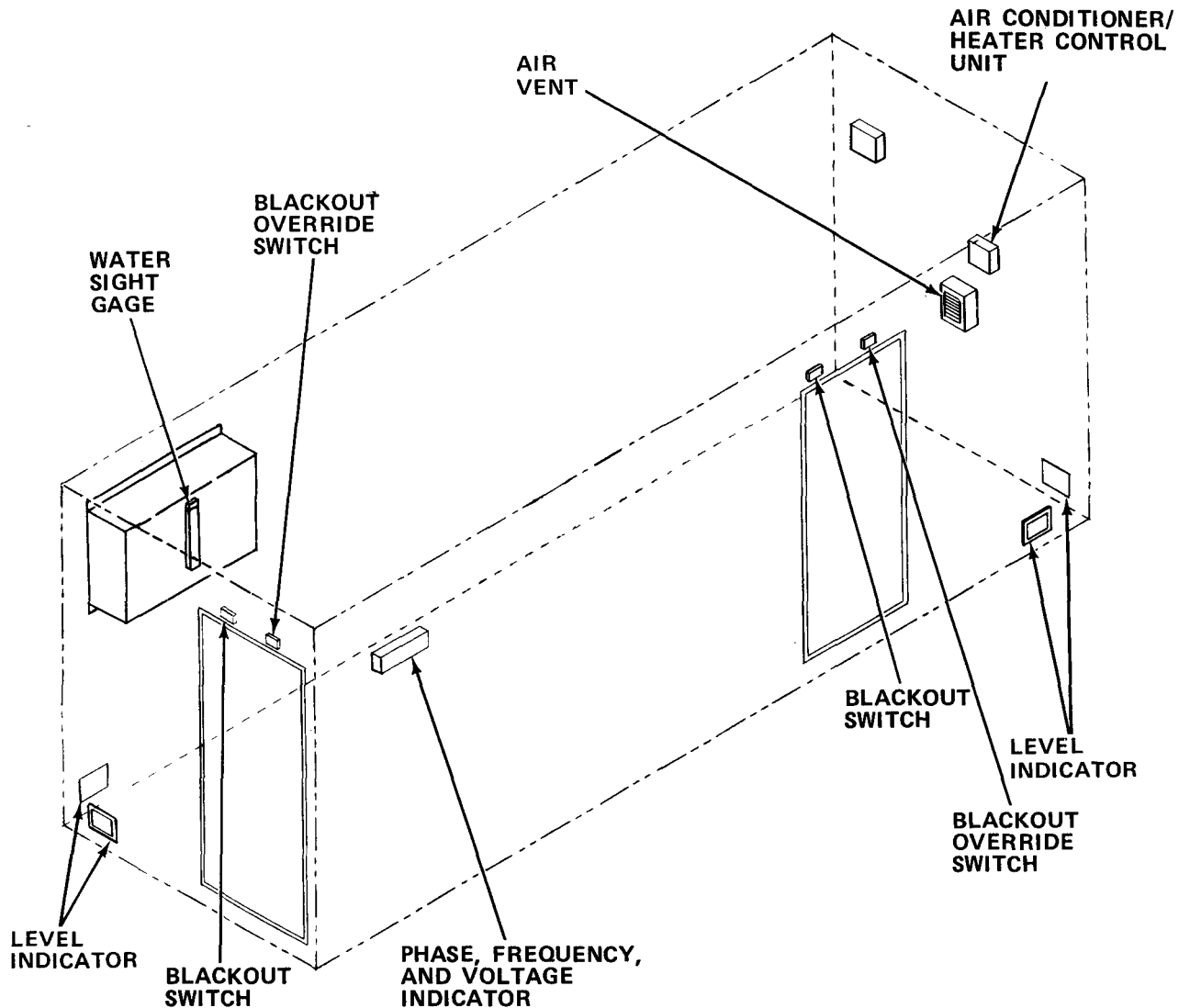
Clean, clear water is pumped into the section through the section water fitting inlet until the storage tank is filled. The water storage tank as it is being filled vents air through the vent line. Water level in storage tank is shown on sight gage. Gravity flow provides on demand water to the sink faucet or sink spray connector as required. Sink drain connects into drain to drain water through section water fitting drain.

1. 1. 3. 6 OPERATING INSTRUCTIONS ON DECALS AND INSTRUCTION PLATES.



Section II. OPERATING INSTRUCTIONS

1.2.1 DESCRIPTION AND USE OF OPERATOR'S CONTROLS AND INDICATORS



CONTROL OR INDICATOR	FUNCTION
Air Vent	Permits make-up air to enter as required.
Air Conditioner/Heater Control Unit	Permits selection of air conditioner or heater mode of operation and temperature.
Water Sight Gage	Indicates level of water in supply tank.

Blackout Override Switch	Bypasses blackout switch.
Blackout Switch	Turns off white lights when door is opened.
Phase, Frequency, and Voltage Indicator	Monitors electrical power phase, frequency, and voltage.
Level Indicators	Aids in leveling van body, ensuring proper equipment operation.

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1.2.2 OPERATOR'S PREVENTIVE MAINTENANCE CHECKS AND SERVICES

- a. Always keep in mind the WARNINGS and CAUTIONS when performing PMCS. Table 1-1 lists the PMCS procedures to be performed by the operator. Be sure to perform the PMCS at the frequency indicated by the INTERVAL codes in the table.
- b. If your equipment fails to operate, troubleshoot with the proper equipment. Report any deficiencies in accordance with DA Pam 738-750.

**NOTE**

If the equipment must be kept in continuous operation, check and service only those items that can safely be checked and serviced without disturbing operation. Make the complete checks and services when the equipment can be shut down.

- c. The numbers found in the ITEM NUMBER column shall be used as a source of item numbers for the TM ITEM NUMBER column on DA Form 2404, Equipment Inspection and Maintenance Worksheet, in recording the results of PMCS.
- d. List of tools and materials required for PMCS is as follows:

<u>Item</u>	<u>Quantity</u>
Wire Brush	1 ea
Adjustable Wrench (6 in.)	1 ea
Flat-Tipped Screwdriver	1 ea
Vacuum Cleaner	1 ea
Cleaning Cloths	<b>ar</b>
Bucket	1 ea
General Purpose Detergent	ar
Emery Cloth	<b>ar</b>
Eye Dropper	1 ea

**Table 1-1. OPERATOR' S PREVENTIVE MAINTENANCE CHECKS AND SERVICES**

B . Before                      W . Weekly                      AN - Annually                      (Number) - Hundreds of Hours  
 D - During                      M - Monthly                      S - Semiannually  
 A . After                      Q - Quarterly                      BI - Biennially

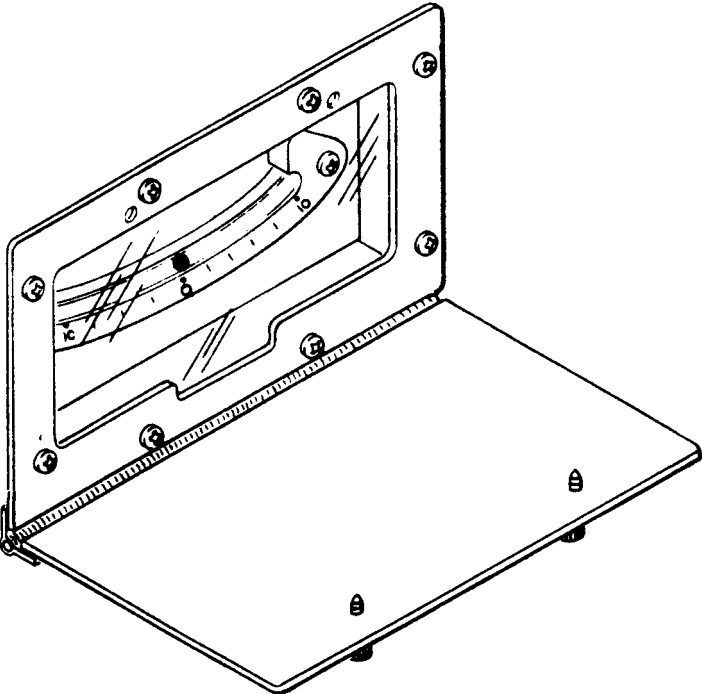
ITEM NO.	INTERVAL	ITEM TO BE INSPECTED  PROCEDURE	For Readiness Reporting, Equipment Is Not Ready/ Available If:
1	W	<p><b>VAN BODY</b></p> <p>INSPECT EXTERIOR.</p> <p>1. <b>Inspect</b> van body surfaces for punctures, cracks, or open seams that could permit moisture to enter wall.</p> 	Punctures, cracks, or open seams are present.
	B	<p>2. Inspect four level indicators for damage and to be sure van body has remained level.</p>	Indicators are broken.

Table 1-1. OPERATOR'S PREVENTIVE MAINTENANCE CHECKS AND SERVICES (Cont)

B - Before  
D - During  
A - After

W - Weekly  
M - Monthly  
Q - Quarterly

AN - Annually  
S - Semiannually  
BI - Biennially

(Number) - Hundreds of Hours

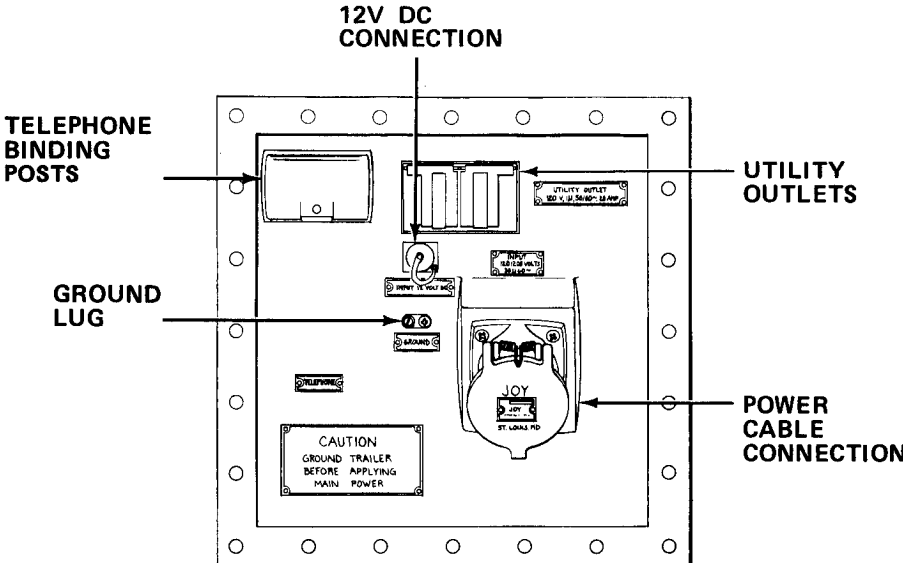
ITEM NO.	INTERVAL	ITEM TO BE INSPECTED  PROCEDURE	For Readiness Reporting, Equipment Is Not Ready/ Available If:
1		<p><b><u>VAN BODY</u></b></p> <p>INSPECT EXTERIOR (Cont).</p> <p style="text-align: center;"><b><u>WARNING</u></b></p> <p style="text-align: center;">TO PREVENT DEATH OR SERIOUS INJURY, DO NOT HANDLE OR CLEAN POWER CABLE OR CONNECTORS WHEN CABLE IS CONNECTED TO POWER SOURCE.</p> <p>B 3. Inspect power cable assembly for dirt or damaged connectors.</p> <p style="padding-left: 40px;">Wipe cable insulation with clean, dry cloth to remove dirt.</p> <p style="padding-left: 40px;">Clean corrosion from terminals. Be sure cleaning residue is removed.</p> <div style="text-align: center;">  </div> <p>B/W 4. Inspect power entry panel for accumulated dirt, water, or corrosion.</p> <p style="padding-left: 40px;">Clean power entry panel.</p>	<p>Connector damaged.</p>

Table 1-1. OPERATOR' S PREVENTIVE MAINTENANCE CHECKS AND SERVICES (Cont)

B - Before  
D - During  
A - After

W - Weekly  
M - Monthly  
Q - Quarterly

AN - Annually  
S - Semiannually  
BI - Biennially

(Number) - Hundreds of Hours

ITEM NO.	INTERVAL	ITEM TO BE INSPECTED  PROCEDURE	For Readiness Reporting, Equipment Is Not Ready/ Available If:
1	B/A	<p><b><u>VAN BODY</u></b></p> <p>INSPECT EXTERIOR (Cont).</p> <p>5. Inspect power entry panel to be sure any unused receptacles are covered.</p> <div> </div> <p>6. Inspect air conditioner/heater drain tube to be sure tube is positioned as shown.</p>	Missing covers.

**Table 1-1. OPERATOR'S PREVENTIVE MAINTENANCE CHECKS AND SERVICES (Cont)**

B - Before                      W - Weekly                      AN - Annually                      (Number)- Hundreds of  
 D - During                      M - Monthly                      S - Semiannually  
 A - After                      Q - Quarterly                      BI - Biennially

ITEM NO	INTERVAL	ITEM TO BE INSPECTED  PROCEDURE	For Readiness Reporting, Equipment is Not Ready/ Available If:
1	B/D	<p><u>VAN BODY</u></p> <p>INSPECT EXTERIOR (Cont).</p> <div> <p>The top diagram is a perspective view of the exterior of a van body. It shows the roof structure and side panels. Three exhaust fan doors are indicated by lines pointing to the top of the van. A large curved arrow points from the top diagram down to the bottom diagram.</p> <p>The bottom diagram is a perspective view of the interior of the van body, showing the roof structure and a large air vent cover on the right side. A line points from the label 'AIR VENT' to the cover.</p> </div> <p>7. Inspect exhaust fan doors and air vent cover to be sure they are not blocked or clogged.</p>	Blocked or clogged covers.



**Table 1-1. OPERATOR'S PREVENTIVE MAINTENANCE CHECKS AND SERVICES (Cont)**

B - Before                      W - Weekly                      AN - Annually                      (Number) - Hundreds of Hours  
 D - During                      M - Monthly                      S - Semiannually  
 A - After                      Q - Quarterly                      BI - Biennially

ITEM NO.	INTERVAL	ITEM TO BE INSPECTED  PROCEDURE	For Readiness Reporting, Equipment Is Not Ready/ Available If:
1	B/W	<p><b><u>VAN BODY</u></b></p> <p>INSPECT EXTERIOR (Cont).</p> <p>8. Visually inspect ground connections to be sure ground cable is connected to terminal lug and ground rod. <b>If necessary, clean:</b></p> <p style="text-align: center;"><b><u>WARNING</u></b></p> <p style="text-align: center;">ELECTRICAL SHOCK HAZARD. POWER CABLE MUST BE DE-ENERGIZED BEFORE SERVICING ENTRY PANEL CONNECTIONS. DEATH CAN RESULT FROM FAILURE TO OBSERVE THIS SAFETY PRECAUTION.</p> <ul style="list-style-type: none"> <li>● Turn power off to cable. Disconnect from power source.</li> <li>● Disconnect ground lug from ground rod.</li> <li>● Clean lug, cable end, and rod with wire brush.</li> <li>● Reconnect ground cable lug to rod.</li> <li>● Disconnect ground cable end from entry panel.</li> <li>● Clean terminal and cable end with wire brush.</li> <li>● Reconnect ground cable to entry panel.</li> <li>● Reconnect cable to power source. Turn power on.</li> </ul> <p>9. Inspect two boarding ladders:</p> <ul style="list-style-type: none"> <li>● Secure attachment of handrails.</li> <li>● Broken steps.</li> <li>● Locking pins in place.</li> </ul>	<p>Ground connections are broken or missing.</p> <p>Steps broken or ladder will not lock in place.</p>

Table 1-1. OPERATOR'S PREVENTIVE MAINTENANCE CHECKS AND SERVICES (cont)

B - Before                      W - Weekly                      AN - Annually                      (Number) - Hundreds of Hours  
 D - During                      M - Monthly                      S - Semiannually  
 A - After                      Q - Quarterly                      BI - Biennially

ITEM NO.	INTERVAL	ITEM TO BE INSPECTED  PROCEDURE	For Readiness Reporting, Equipment Is Not Ready/ Available If:
<b><u>VAN BODY</u></b>			
1	B/A	<p>INSPECT EXTERIOR (Cont).</p> <p>10. Inspect folding ladder for:</p> <ul style="list-style-type: none"> <li>● Secure attachment to support bracket.</li> <li>● Broken or missing ladder rungs.</li> <li>● Missing or deteriorated safety shoes.</li> </ul> <p style="text-align: center;"><b>NOTE</b></p> <p style="text-align: center;">When van body is mounted on trailer chassis, perform following steps.</p>	<p>Broken or missing rungs. Missing or deteriorated safety shoes.</p>
	B/D	11. Inspect drains from tank and sink to be sure that waste water is properly drained.	
	A/W	12. Inspect front and rear van body locks to be sure locks are fully engaged.	Lock dis-engaged.
	Q	13. Inspect gaskets on personnel doors for leaks and damage.	
	W	13.1. Inspect hinges for proper placement of hinge pins.	Missing hinge pins.
	Q	14. Clean and paint blistered, pitted, or flaking areas and bare metal spots in accordance with instructions contained in TM 43-0139.	
2		INSPECT INTERIOR.	
	B/A	1. Test emergency light by pressing test button located on front panel of emergency light.	Emergency lights do not light.
	B	2. Inspect power cords and cables to be sure wires are not kinked, cut, or cracked.	Wires or cables are cracked or cut.

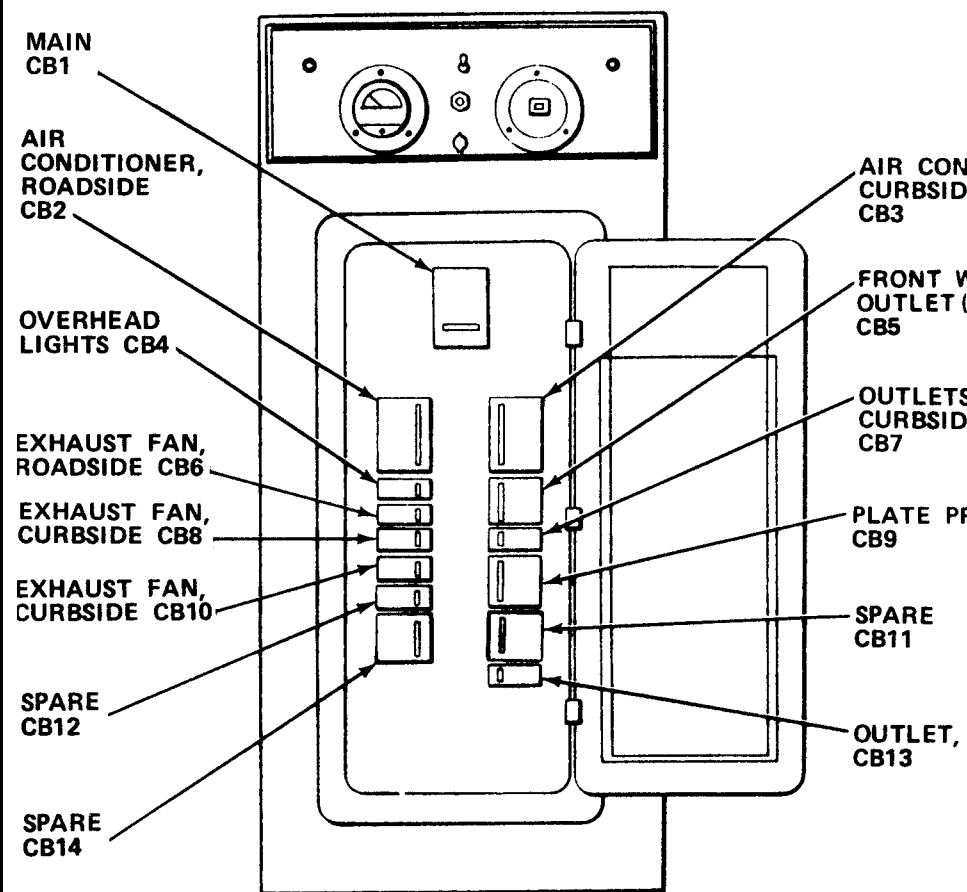
**Table 1-1. OPERATOR'S PREVENTIVE MAINTENANCE CHECKS AND SERVICES (Cont)**

B - Before                      W - Weekly                      AN - Annually                      (Number) - Hundreds of Hours  
 D - During                      M - Monthly                      S - Semiannually  
 A - After                      Q - Quarterly                      BI - Biennially

ITEM NO.	INTERVAL	ITEM TO BE INSPECTED  PROCEDURE	For Readiness Reporting, Equipment is Not Ready/ Available If:
2		<b><u>VAN BODY</u></b>	
		INSPECT INTERIOR (Cont).	
	B	3. <b>Inspect</b> plug connectors to be sure all plug connectors are tight and firmly seated. Tighten if necessary.	
	D	4. Check bulbs and fluorescent lamps. Replace if necessary.	
	W	5. Inspect walls, ceiling, and floor for holes, open seams, or signs of seepage or leaks.	Leaks are present.
	D	6. Check storage cabinets for broken hinges, latches, and locks.	Broken hinge/latch/lock.
	M	7. Inspect fire extinguishers. Be sure security seals are not broken.	Fire extinguisher is missing or seal is broken.
	B	8. Inspect circuit breaker panel.	Defective circuit breaker.
		NOTE  Inspection is to be conducted on a not-to-interfere basis with work being conducted. Individual equipment will be inspected as directed by the appropriate chapter of this manual.	

**Table 1-1. OPERATOR'S PREVENTIVE MAINTENANCE CHECKS AND SERVICES (Cont)**

B - Before                      W - Weekly                      AN - Annually                      (Number) - Hundreds of Hours  
 D - During                      M - Monthly                      S - Semiannually  
 A - After                      Q - Quarterly                      BI - Biennially

ITEM NO.	INTERVAL	ITEM TO BE INSPECTED  PROCEDURE	For Readiness Reporting, Equipment is Not Ready/ Available If:
2		<p><b><u>VAN BODY</u></b></p> <p>INSPECT INTERIOR (Cont).</p> 	
B		<ul style="list-style-type: none"> <li>● Set main circuit breaker to on.</li> </ul>	Circuit breakers do not reset.
B		<ul style="list-style-type: none"> <li>● Set each circuit breaker to off, then on.</li> </ul>	

**Table 1-1. OPERATOR'S PREVENTIVE MAINTENANCE CHECKS AND SERVICES (Cont)**

B - Before                      W - Weekly                      AN - Annually                      (Number) - Hundreds of Hours  
 D - During                      M - Monthly                      S - Semiannually  
 A - After                      Q - Quarterly                      BI - Biennially

ITEM NO.	INTERVAL	ITEM TO BE INSPECTED  PROCEDURE	For Readiness Reporting, Equipment Is Not Ready/ Available If:
2	M          B/A	<p><u>VAN BODY</u></p> <p>INSPECT INTERIOR (Cont).</p> <p>9. Inspect light traps.</p> <ul style="list-style-type: none"> <li>● Turn on fluorescent lamps (high level).</li> <li>● Close entrance doors. Have exhaust fan and air vents open. Inspect for light leakage through vents.</li> <li>● Place light switches on; blackout override switches off.</li> <li>● Open door and make sure internal lights go off.</li> </ul> <p>10. Inspect water system.</p> <ul style="list-style-type: none"> <li>● Inspect for leaks in tank or piping.</li> <li>● Inspect for secure fastening of piping to section walls.</li> <li>● Inspect internal valves to be certain that unused valves are closed.</li> </ul>	<p>Light leaks are present.</p> <p>Blackout system inoperable.</p> <p>Water leaks.</p>

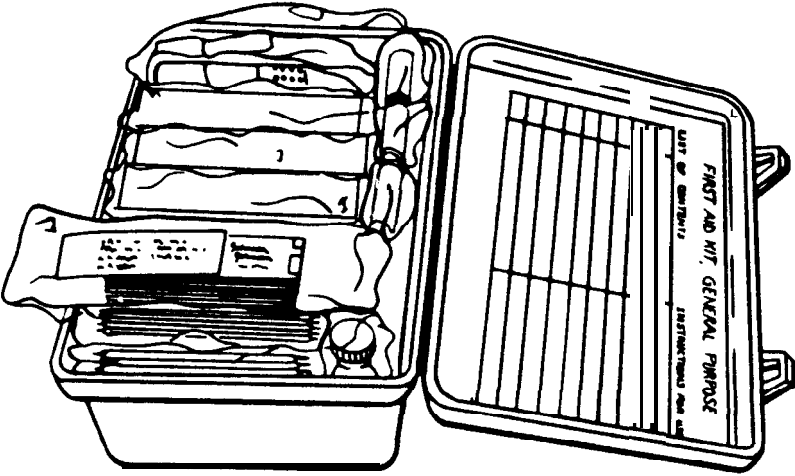
**Table 1-1. OPERATOR'S PREVENTIVE MAINTENANCE CHECKS AND SERVICES (Cont)**

B - Before                      W - Weekly                      AN - Annually                      (Number) - Hundreds of Hours  
 D - During                      M - Monthly                      S - Semiannually  
 A - After                      Q - Quarterly                      BI - Biennially

ITEM NO.	IN-TER-VAL	ITEM TO BE INSPECTED  PROCEDURE	For Readiness Reporting, Equipment Is Not Ready/ Available If:
2	W	<p><u>VAN BODY</u></p> <p>INSPECT INTERIOR (Cont).</p> <p><b>11. Inspect/Clean interior.</b></p> <p style="text-align: center;"><u>WARNING</u></p> <p>DEATH OR SERIOUS INJURY MAY OCCUR IF WET OR DAMP CLOTH IS USED TO WIPE OR CLEAN ENERGIZED EQUIPMENT, POWER CORDS, OR CABLES.</p> <p style="text-align: center;"><u>CAUTION</u></p> <p>DO NOT SWEEP INTERIOR. DISLODGED DIRT OR DUST WILL RUIN OPTICAL, ELECTRONIC, AND PHOTOGRAPHIC EQUIPMENT AND SUPPLIES.</p> <ul style="list-style-type: none"> <li>● Wipe vertical and horizontal painted surfaces with cleaning cloth moistened with solution of general purpose detergent and fresh water until soil is removed from painted surfaces.</li> <li>● Dry vertical and horizontal painted surfaces with clean cloth.</li> <li>● Vacuum interior of Section to remove dirt and waste. Pay particular attention to work stations.</li> </ul>	

**Table 1-1. OPERATOR'S PREVENTIVE MAINTENANCE CHECKS AND SERVICES (Cont)**

B - Before                      W - Weekly                      AN - Annually                      (Number) - Hundreds of Hours  
 D - During                      M - Monthly                      S - Semiannually  
 A - After                      Q - Quarterly                      BI - Biennially

ITEM NO.	INTERVAL	ITEM TO BE INSPECTED  PROCEDURE	For Readiness Reporting, Equipment Is Not Ready/ Available If:
2	M	<p><b><u>VAN BODY</u></b></p> <p>INSPECT INTERIOR (Cont).</p> <p>12. Inspect first aid kit.</p>  <ul style="list-style-type: none"> <li>● Remove first aid kit from bracket.</li> <li>● Remove contents.</li> <li>● Inspect container for damage.</li> <li>● Inspect contents for damage. Then use checklist to inventory contents for completeness.</li> <li>● Replace damaged or missing contents.</li> <li>● Repack kit.</li> <li>● Reinstall kit.</li> </ul>	First aid kit missing.

**Table 1-1. OPERATOR'S PREVENTIVE MAINTENANCE CHECKS AND SERVICES (Cont)**

B - Before  
D - During  
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AN - Annually  
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(Number) - Hundreds of Hours

ITEM NO.	INTERVAL	ITEM TO BE INSPECTED  PROCEDURE	For Readiness Reporting, Equipment Is Not Ready/ Available If:
2	W	<p><b><u>VAN BODY</u></b></p> <p>INSPECT INTERIOR (Cont).</p> <p>13. Inspect blackout curtains.</p> <p>    iii Inspect blackout curtains and valances for tears, missing hooks, or broken eyelets.</p> <p>    . Inspect nylon hook tape on curtain and wall for security of attachment.</p>	Curtains damaged.
	W	<p>14. Inspect mason-type Psychrometer.</p> <div style="text-align: center;"> </div> <ul style="list-style-type: none"> <li>● Inspect thermometers for damage.</li> <li>● Be sure wick is clean and completely saturated with water.</li> <li>● Be sure cistern is filled with water.</li> </ul>	



**Table 1-1. OPERATOR' S PREVENTIVE MAINTENANCE CHECKS AND SERVICES (Cont)**

B - Before                      W - Weekly                      AN - Annually                      (Number) - Hundreds of Hours  
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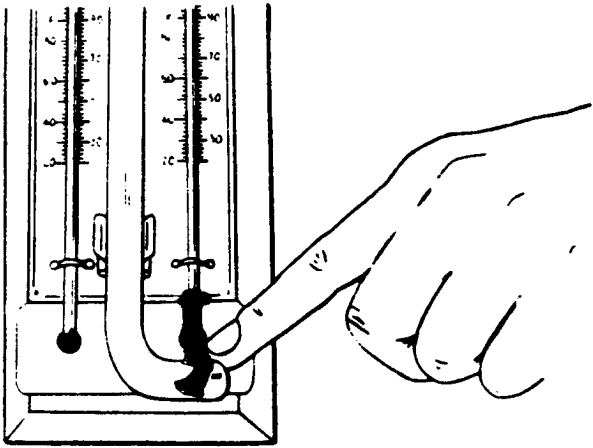
ITEM NO.	INTERVAL	ITEM TO BE INSPECTED  PROCEDURE	For Readiness Reporting, Equipment Is Not Ready/ Available If:
2	AN	<p><b><u>VAN BODY</u></b></p> <p>INSPECT INTERIOR (Cont).</p> <p>15. Replace wick.</p> <ul style="list-style-type: none"> <li>● Remove psychrometer from wall.</li> </ul>  <ul style="list-style-type: none"> <li>● Use tweezers to remove wick from wet bulb thermometer and cistern.</li> </ul>	

Table 1-1. OPERATOR' S PREVENTIVE MAINTENANCE CHECKS AND SERVICES (Cont)

		B - Before D - During A After	W - Weekly M - Monthly Q - Quarterly	AN - Annually S - Semiannually BI - Biennially	(Number) - Hundreds of Hours
ITEM NO.	IN-TER VAL	ITEM TO BE INSPECTED  PROCEDURE			For Readiness Reporting, Equipment Is Not Ready/ Available If:
2		<p><b><u>VAN BODY</u></b></p> <p>INSPECT INTERIOR (Cont).</p> <ul style="list-style-type: none"> <li>● Grasp new wick with tweezers, and slip wick over wet bulb thermometer.</li> <li>● Fill cistern with clean, fresh water.</li> <li>● Insert other end of wick into cistern.</li> <li>● Use eyedropper to saturate wick.</li> <li>● Mount psychrometer on wall.</li> </ul>			
3	B	INSPECT AIR CONDITIONER/HEATER. Refer to TM 5-4120-367-14 for preventive maintenance checks and services that pertain to air conditioners/heaters.			
4	M	<p><u>Service Power Cable.</u></p> <p style="text-align: center;"><b><u>WARNING</u></b></p> <p style="text-align: center;">Electrical shock hazard.</p> <p>Power cable must be de-energized before servicing. Death or serious injury may occur from failure to observe this safety precaution.</p> <ol style="list-style-type: none"> <li>1. Turn off safety switch.</li> <li>2. Disconnect cable from power entry panel.</li> <li>3. Wrap any cuts or abrasions in cable with electrical insulation tape.</li> <li>4. Reconnect power cable to entry panel.</li> </ol>			

**1.2.3 OPERATION UNDER USUAL CONDITIONS.** Operation of the Plate Process Section consists of activation of power after the Section has been located at the operation site and 12 vdc power disconnected. TM 5-2330-305-14 provides detailed instructions for disconnection of trailer chassis from tractor.

## 1.2.3.1 PREPARATION FOR USE

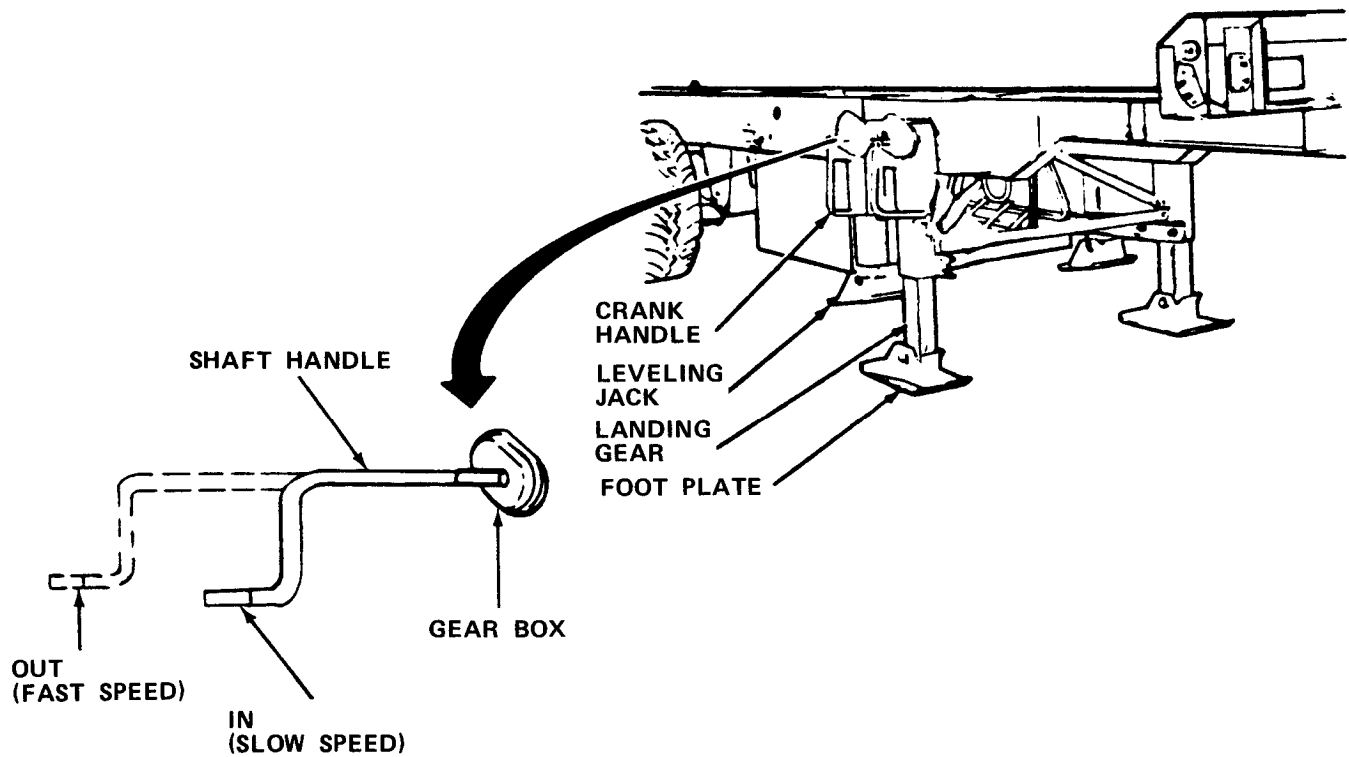
a. Procedures for Leveling**CAUTION**

TRAILER-MOUNTED SECTION MUST BE ON SURFACE THAT IS APPROXIMATELY LEVEL TO AVOID UNNECESSARY STRESS OR TWISTING OF CHASSIS WHEN SECTION IS LEVELED.

**NOTE**

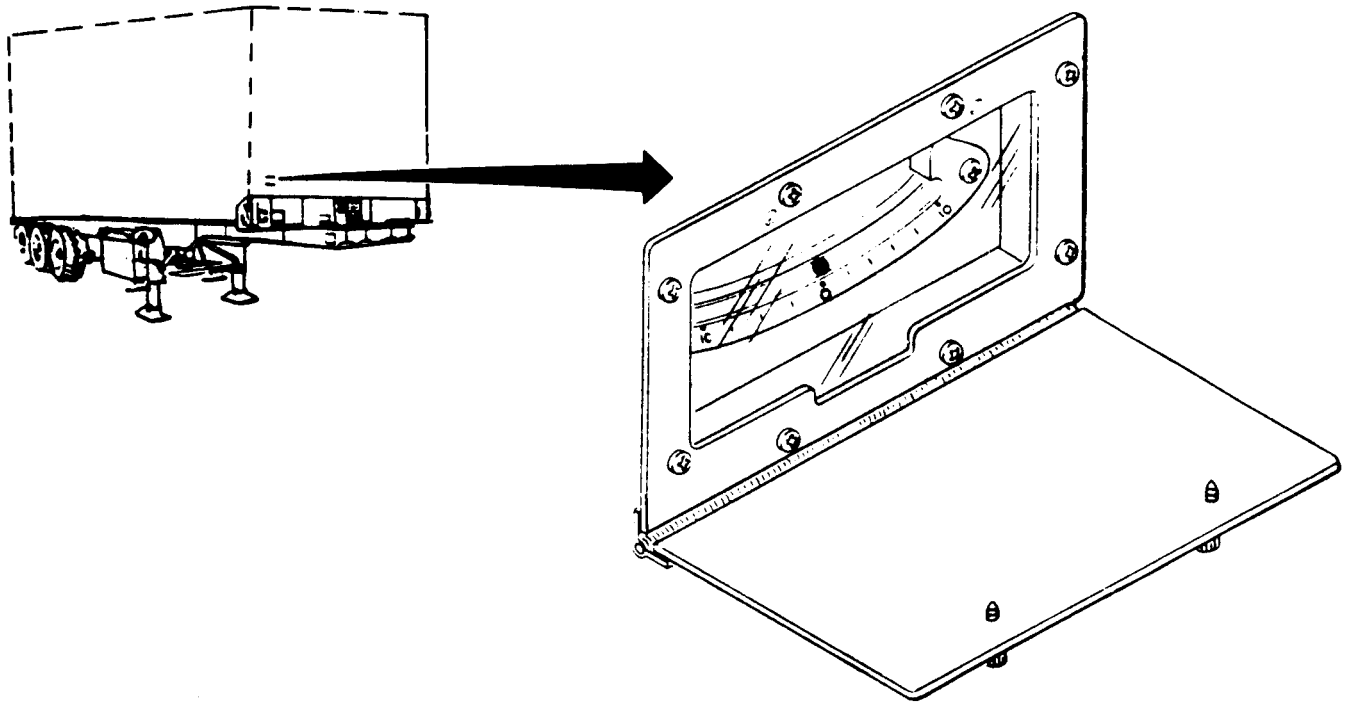
- Be sure that air suspension is deflated as indicated in TM 5-2330-305-14.
- Snow or ice should be removed from under leveling foot plate before attempting to level Section.
- Sand, soft ground, or mud requires that shoring or scrap material be placed under leveling foot plate to increase surface area and prevent foot plate from sinking into surface.



**NOTE**

To remove handle from secured location, extend gear box shaft.

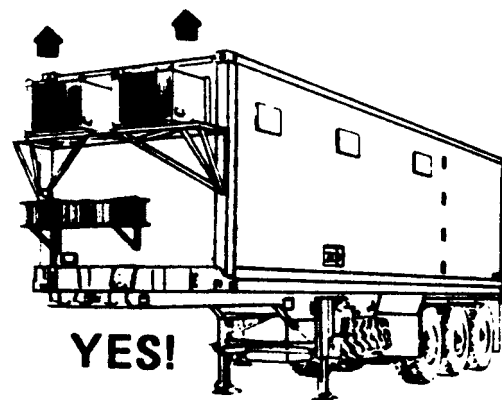
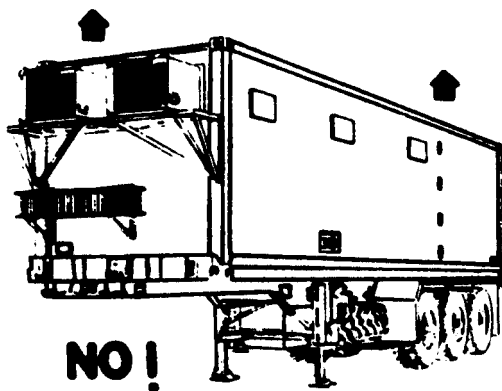
1. Move handle from secured location and swing out. There are two positions when handle is engaged: Fully in toward chassis is slow speed. Fully out is fast speed.
2. Approximately level trailer chassis by raising or lowering landing gear.
3. Swing crank handle on each leveling jack out and engage.
4. Lower each leveling jack by turning crank to left at high speed until foot plate just contacts ground.



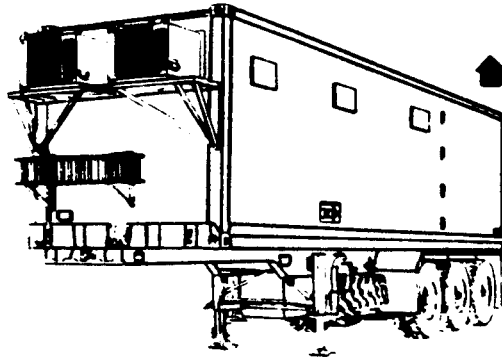
5. Station personnel to have a clear view of level indicators at both front and rear of van body.
6. Observe level indicators to determine which end and side must be raised/lowered.

**CAUTION**

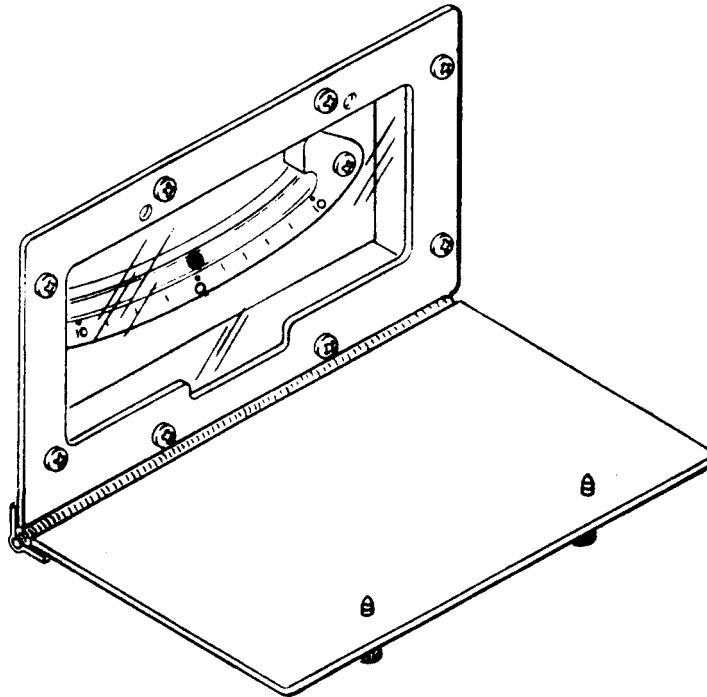
DO NOT ATTEMPT TO LEVEL SECTION BY LIFTING AT DIAGONAL CORNERS, OR FRAME WILL BE TWISTED.



7. Raise low end by extending both leveling jacks at low end. Use low speed.

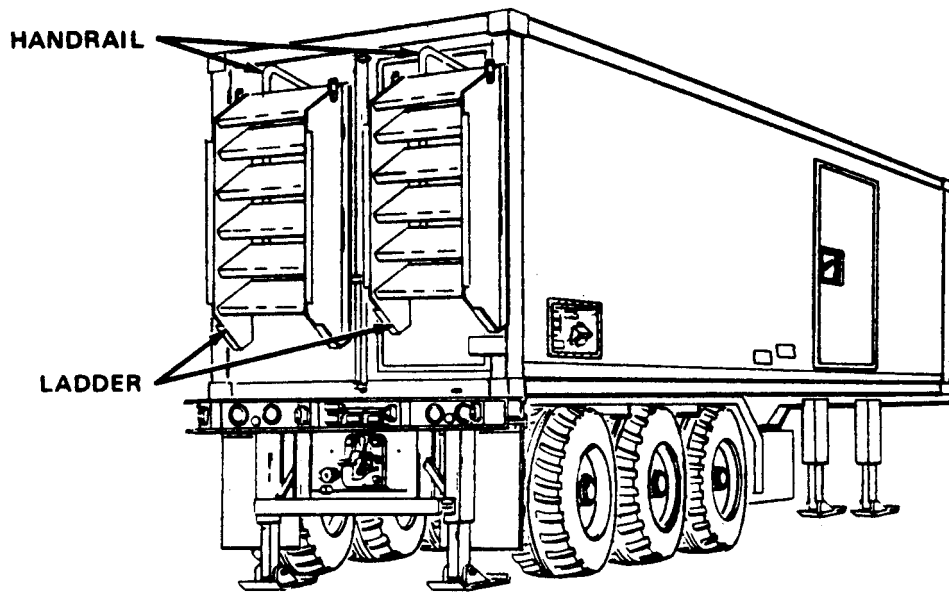


8. Raise low side by extending both leveling jacks at low side.



9. Be sure ball is within one-half division of center on all four level indicators.
10. Pull leveling crank handles away from trailer chassis, and lower crank handle to stowed position.

b. Procedures to Activate Section



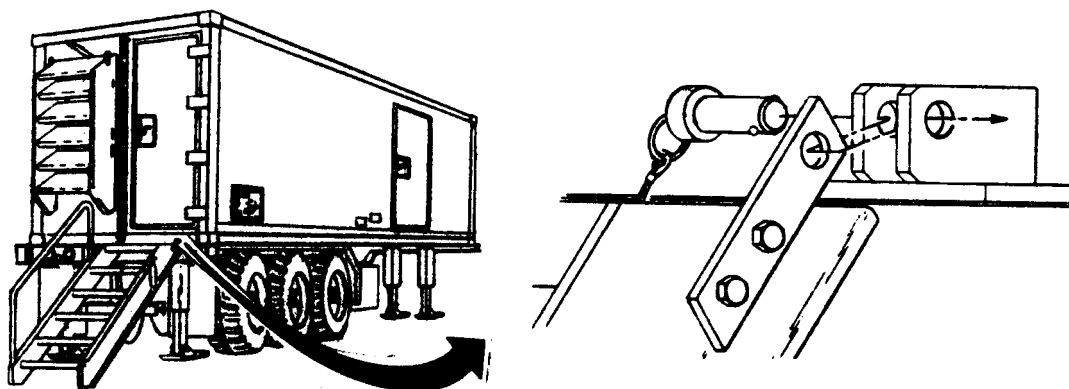
WARNING

TO PREVENT PERSONAL INJURY, USE TWO PERSONNEL TO REMOVE THE BOARDING LADDERS FROM THE REAR OF THE SECTION.

**NOTE**

Ladders shown in position for movement.

1. Remove boarding ladders and handrails from rear of Section.
2. Remove handrails from ladders.



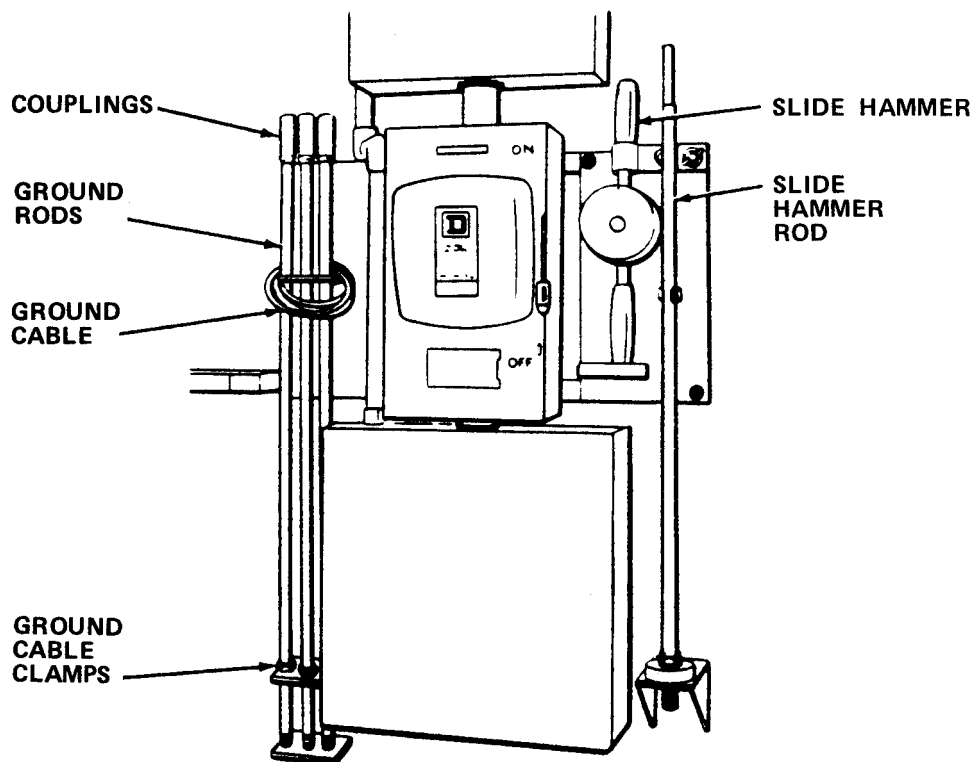
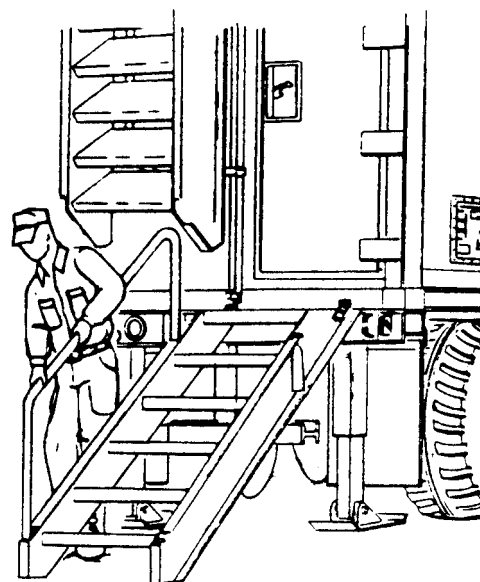
3. Mount ladders at personnel rear and side doors and secure with locking pins.



4. Mount one handrail on each ladder.
5. Enter van body and be sure safety switch, main circuit breaker, and all equipment power supply switches are off.

**WARNING**

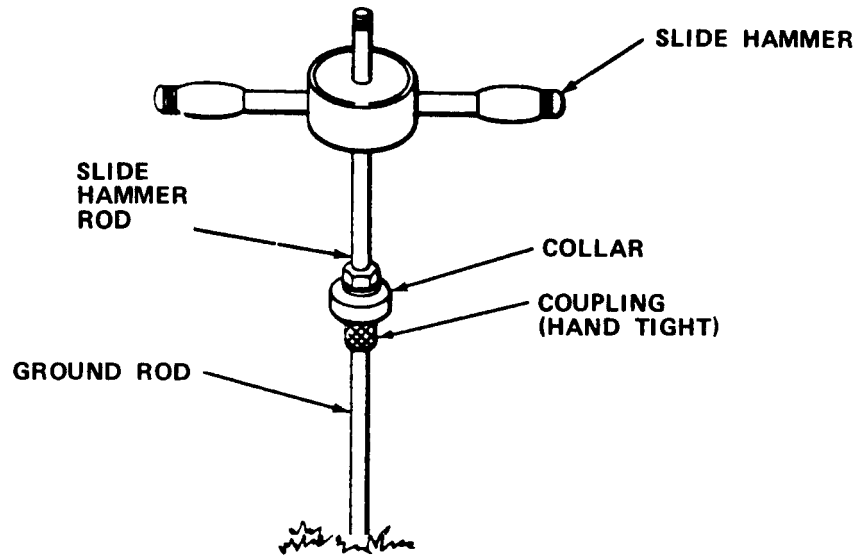
DO NOT CONNECT POWER CABLES UNTIL SECTION IS GROUNDED. DEATH OR SERIOUS INJURY MAY RESULT.



6. Remove ground rods, slide hammer, slide hammer rod, and ground cable from van body.

NOTE

- Bottom ground rod must be numbered or identified so that it will always be the first rod driven into the ground.
- Apply a thin film of grease to threaded end of rods before driving into ground. This will permit easy disassembly upon removal.



7. Select an area as close to power entry panel as possible to install ground rod. Then assemble the first ground rod and coupling to the slide hammer rod.

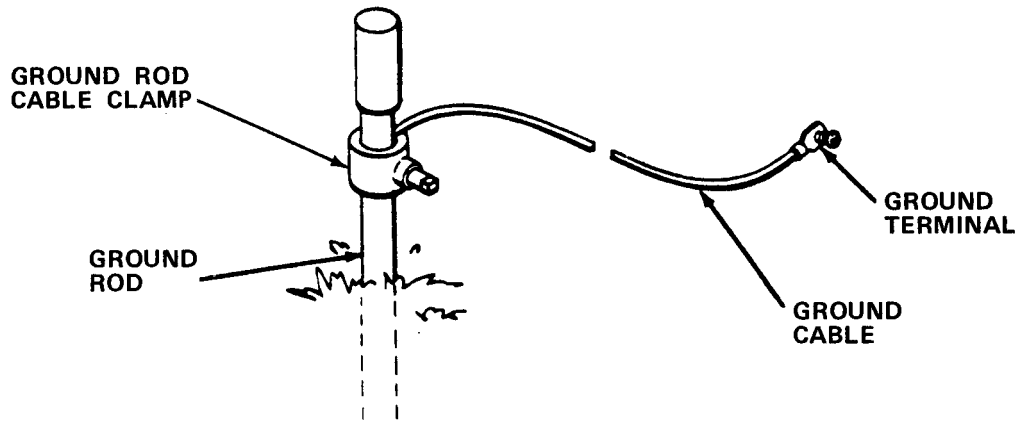
CAUTION

DO NOT ALLOW GROUND ROD TO ROTATE WHEN REMOVING THE SLIDE HAMMER ROD, OR GROUND ROD SECTIONS MAY BE LOST IN GROUND.

NOTE

Before driving ground rod be certain that rods meet inside coupling. Be sure collar is handtight snug against coupling.

8. Place slide hammer on hammer rod end, and drive ground rod into ground. Remove slide hammer rod. Attach slide hammer rod to a new section of ground rod, and repeat procedure until only 1 ft (304.80 mm) of the third rod is above ground.
9. Remove slide hammer and hammer rod, and place in van body.
10. Mount ground cable clamp and cable to ground rod, then connect ground cable to ground terminal lug.

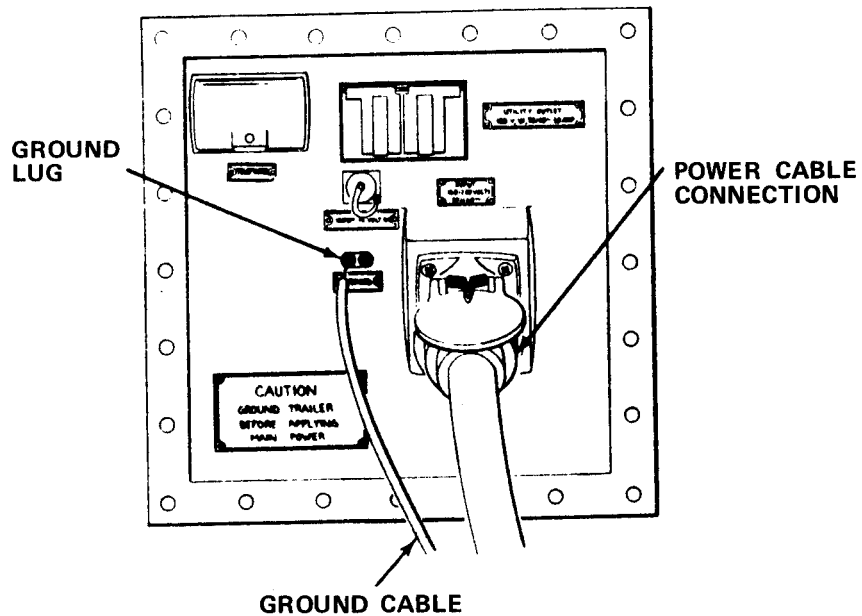


**WARNING**

TO PREVENT DEATH OR SERIOUS **INJURY**, DO NOT HANDLE OR CLEAN POWER CABLE OR CONNECTORS WHEN CABLE IS CONNECTED TO POWER SOURCE.

**NOTE**

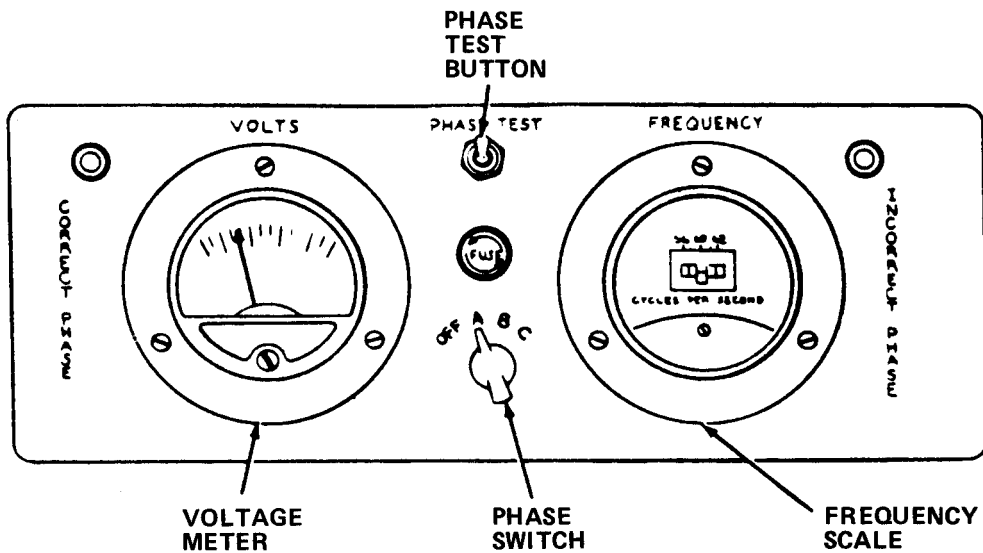
The section must be properly grounded before power is connected. If it is not possible to drive the three sections of ground rod fully into ground, the rods may each be driven into the ground separately and connected in series. If it is impossible to drive a ground rod, a suitable alternative ground must be found, such as a buried metal water pipe. Refer to TC 11-6, Grounding Techniques.



11. Firmly connect the power cable to the power receptacle.

**CAUTION**

Be sure safety switch is off before connecting power cable to avoid equipment damage.

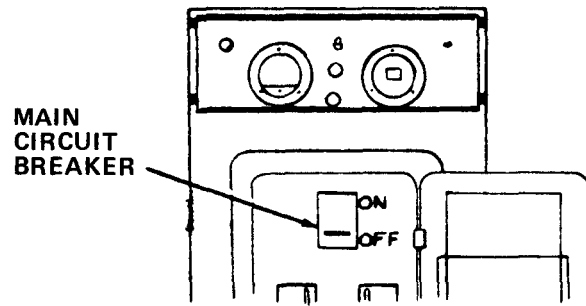


12. Check voltage and frequency as follows:

Push phase test button. Observe correct phase lamp lights.

**CAUTION**

- DO NOT ENERGIZE SECTION IF INCORRECT PHASE LAMP LIGHTS . DAMAGE TO EQUIPMENT MAY RESULT.
- VOLTAGE MUST BE BETWEEN 110 AND 120, AND FREQUENCY MUST BE AT 60 +1 HZ ON EACH LEG BEFORE TURNING ON MAIN CIRCUIT BREAKER OR DAMAGE TO EQUIPMENT MAY RESULT.
  
- Turn phase switch to A.
- Read voltage on meter.
- Read frequency on scale for 60 +1 Hz.
- Repeat for positions B and C on phase switch.



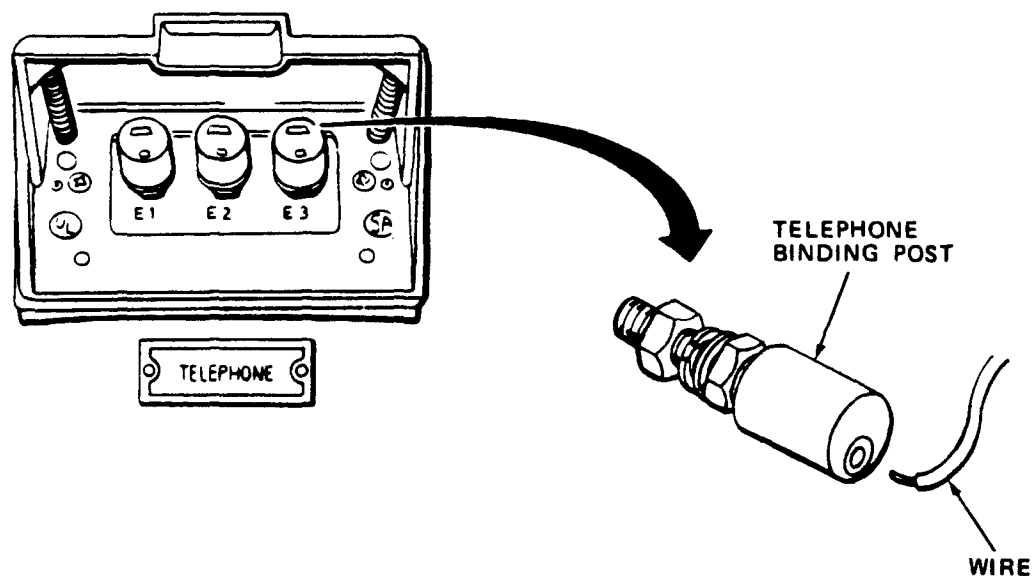
13. Set main circuit breaker on.



**NOTE**

This step must be accomplished if section is placed in operation in darkness, fog, or mist under blackout conditions.

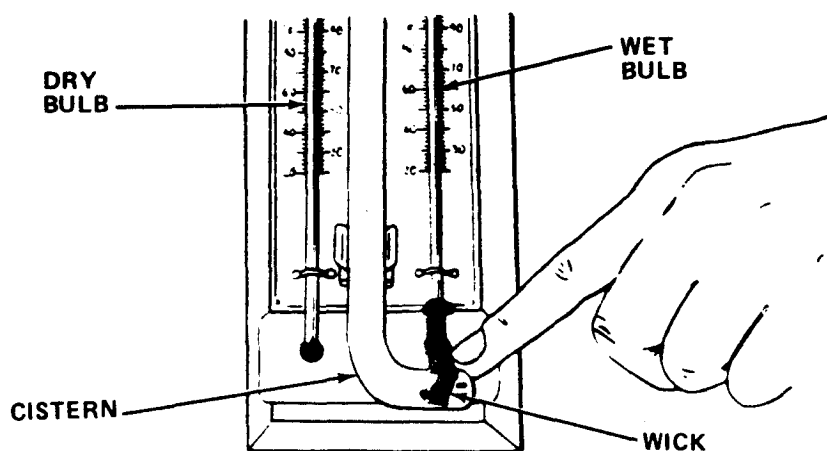
14. Close blackout curtains, if required.
15. Turn on circuits in following order:
  - Individual lighting switches.
  - Curbside and roadside air conditioners/heaters as directed by TM 5-4120-367-14.
  - Check operation of individual equipment switches.



16. Connect telephone lines to corresponding telephone binding posts.
17. Check blackout switches.
18. Plug in emergency lighting and turn switch to ready.

19. Fill water storage tank.
  - Secure outside water source hose to section roadside supply fitting.
  - Open system fill valve.
  - Pump water into storage tank until tank sight gage indicates full .
  - Close fill valve.
  - Disconnect water source hose and install fitting cap.
  
20. Determine relative humidity.
  - . Relative humidity in the section should be at proper level to process lithographic plates. Good conditions to process lithographic plates are when the section temperature is  $70^{\circ}\text{F} \pm 2^{\circ}\text{F}$  ( $21^{\circ}\text{C} \pm 2^{\circ}\text{C}$ ) and relative humidity is  $45\% \pm 3\%$ . Adjust air conditioner controls until the proper temperature and relative humidity is reached. The method of checking relative humidity is as follows:





- Check water level in cistern.
- Use eyedropper to add water to saturate wick and fill cistern.
- Allow 5 minutes to lapse before recording wet and dry bulb readings.
- Convert wet and dry bulb thermometer readings to relative humidity as follows:

Air Temperature (dry bulb): 68°F

wet bulb: 62°F

Depression = dry bulb (t) - wet bulb (t1) = 68°F - 62°F = 6°F

Depression = 6°F

Use left column (Table 1-2) to find air temperature of 68°F.

Use top column (Table 1-2) to find depression of 6°F.

The intersection of both columns gives the percent of relative humidity, in this case 71%.



RELATIVE HUMIDITY, PER CENT - FAHRENHEIT TEMPERATURES -Cont.

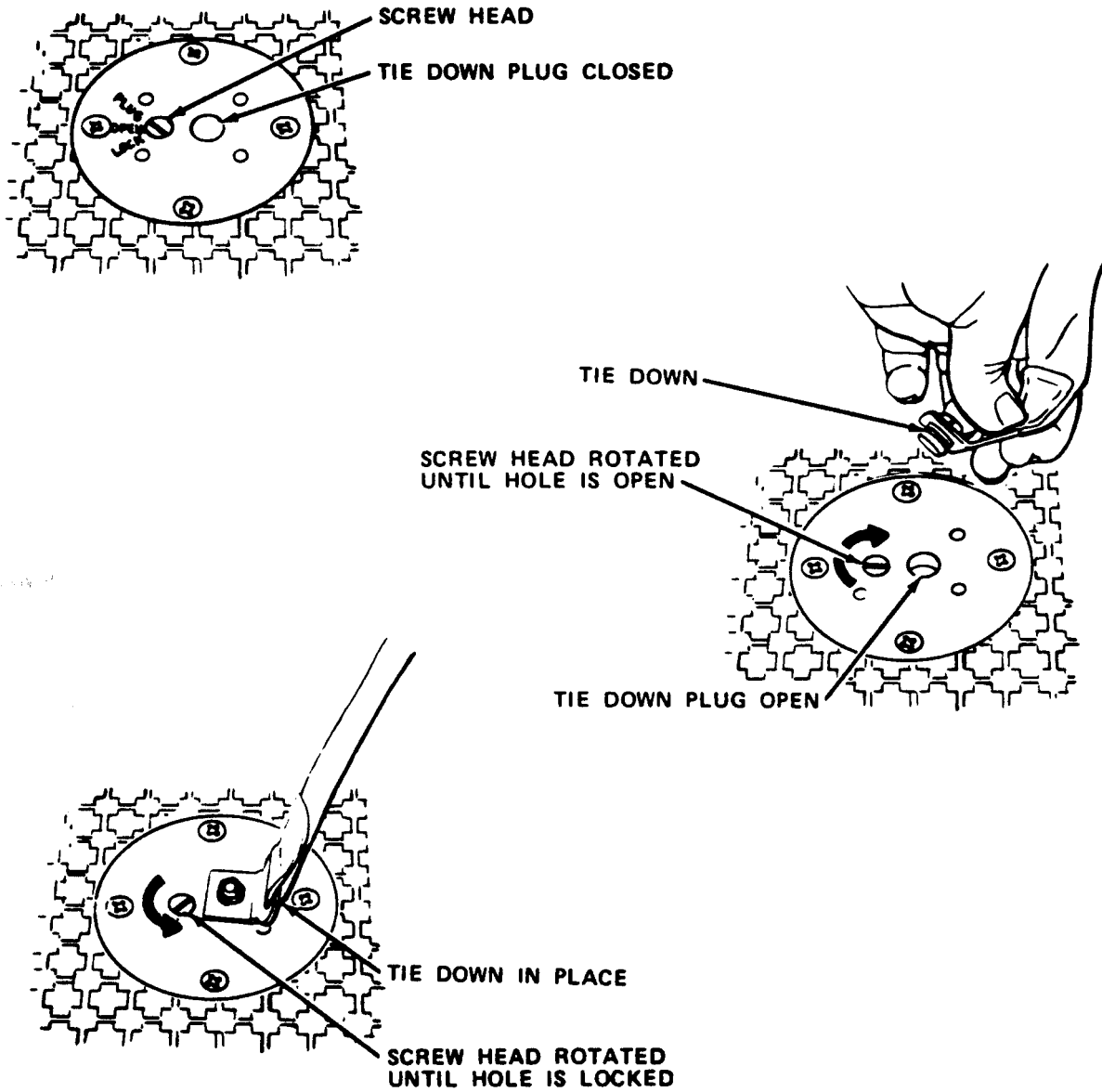
PRESSURE EQUALS 30.0 INCHES

AIR TEMP	DEPRESSION OF WET-BULB THERMOMETER t-t1																					
t	11.0	11.5	12.0	12.5	13.0	13.5	14.0	14.5	15.0	15.5	16.0	16.5	17.0	17.5	18.0	18.5	19.0	19.5	20.0	20.5	21.0	
35	2																					
36	5	1																				
37	7	3																				
38	10	6	2																			
39	12	9	5	1																		
40	16	11	7	4	0																	
41	17	13	10	6	3																	
42	19	16	12	9	5	2																
43	21	18	14	11	8	4	1															
44	23	20	16	13	10	7	4	0														
45	25	22	18	15	12	9	6	3														
46	26	23	20	17	14	11	8	5	2													
47	28	25	22	19	16	13	10	7	5	2												
48	29	26	23	21	18	15	12	9	7	4	1											
49	31	28	25	22	19	17	14	11	9	6	3	1										
50	32	29	27	24	21	18	16	13	10	8	5	3	0									
51	34	31	28	26	23	20	17	15	12	9	7	4	2									
52	35	32	29	27	24	22	19	17	14	11	9	6	4	1								
53	36	33	31	28	26	23	20	18	16	13	10	8	6	3	1							
54	37	35	32	29	27	24	22	20	17	15	12	10	8	5	3	1						
55	38	36	33	31	28	26	23	21	19	16	14	12	9	7	5	2	0					
56	39	37	34	32	30	27	25	22	20	18	16	14	11	9	7	4	2					
57	40	38	35	33	31	28	26	24	22	19	17	15	13	10	8	6	4	2				
58	41	39	37	34	32	30	27	25	23	21	18	16	14	12	10	8	6	3	1			
59	42	40	38	35	33	31	29	26	24	22	20	18	16	13	11	9	7	5	3	1		
60	43	41	39	37	34	32	30	28	26	23	21	19	17	15	13	11	9	7	5	3	1	
61	44	42	40	38	35	33	31	29	27	25	22	20	18	16	14	12	10	8	7	5	3	
62	45	43	41	39	36	34	32	30	28	26	24	22	20	18	16	14	12	10	8	6	4	
63	46	44	42	40	37	35	33	31	29	27	25	23	21	19	17	15	13	11	10	8	6	
64	47	45	43	41	38	36	34	32	30	28	26	24	22	20	18	17	15	13	11	9	7	
65	48	46	44	41	39	37	35	33	31	29	27	25	24	22	20	18	16	14	12	11	9	
66	48	46	44	42	40	38	36	34	32	30	29	27	25	23	21	19	17	16	14	12	10	
67	49	47	45	43	41	39	37	35	33	31	30	28	26	24	22	20	19	17	15	13	12	
68	50	48	46	44	42	40	38	36	34	32	31	29	27	25	23	21	20	18	16	15	13	
69	51	49	47	45	43	41	39	37	35	33	32	30	28	26	24	23	21	19	18	16	14	
70	51	49	48	46	44	42	40	38	36	34	33	31	29	27	25	24	22	20	19	17	15	
71	52	50	48	46	45	43	41	39	37	35	33	32	30	28	27	25	23	22	20	18	17	
72	53	51	49	47	45	43	42	40	38	36	34	33	31	29	28	26	24	23	21	19	18	
73	53	51	50	48	46	44	42	40	39	37	35	34	32	30	29	27	25	24	22	20	19	
74	54	52	50	48	47	45	43	41	39	38	36	34	33	31	29	28	26	26	23	21	20	

1.2.3.2 PREPARATION FOR MOVEMENT

a. Interior

1. Inventory equipment and supplies.



2. Install tie-downs in tie-down sockets.
3. Secure authorized equipment in proper containers or as specified by appropriate chapters.
4. Secure straps and remove slack from tie-downs.

**WARNING**

MOVEMENT OF SECTION WITH FILLED WATER TANK WILL RAISE THE CENTER OF GRAVITY, CAUSE UNSTABLE WEIGHT DISTRIBUTION, AND MAY RESULT IN SEVERE PERSONAL INJURY OR EQUIPMENT DAMAGE.

5. Open all valves and drain water tank and sink.

**WARNING**

DEATH OR SERIOUS INJURY MAY OCCUR IF POWER CABLE IS DISCONNECTED WHILE POWER IS ON.

6. Turn equipment switches off.
7. Set circuit breakers off.
8. Turn main power circuit breaker off.
9. Turn safety switch off.
10. Disconnect power cable at supply end. Then disconnect power cable from receptacle. Put cable in storage box on trailer chassis.
11. Turn emergency light switch off. Then disconnect plug.
12. Disconnect telephone cables.
13. Remove ground cable from ground terminal lug and ground rod cable clamp.

**CAUTION**

DO NOT ALLOW GROUND ROD TO ROTATE WHEN REMOVING THE SLIDE HAMMER ROD OR GROUND ROD SECTIONS MAY BE LOST IN GROUND.

14. Remove ground rod with slide hammer, and put ground rods, couplings, and slide hammer inside van body. Clean threads on each ground rod before storing.
15. Reinspect van body interior with auxiliary light for loose equipment and close all vents.

16. Close van body. Secure and lock all personnel and cargo doors.

b. Exterior

NOTE

Be certain exhaust fan and air vent doors are securely closed.

1. Be sure air conditioner/heater covers are down and secured.

WARNING

TO AVOID SERIOUS PERSONAL INJURY, USE TWO PERSONNEL TO LIFT BOARDING LADDERS.

2. Remove handrails from boarding ladders.
3. Remove boarding ladders and insert rails into back of ladders.
4. Secure ladders to back of van body.
5. Fully extend landing gear.
6. Retract leveling jacks.
7. Couple van body to tractor as directed by TM 5-2330-305-14.

1.2.4 OPERATION UNDER UNUSUAL CONDITIONS

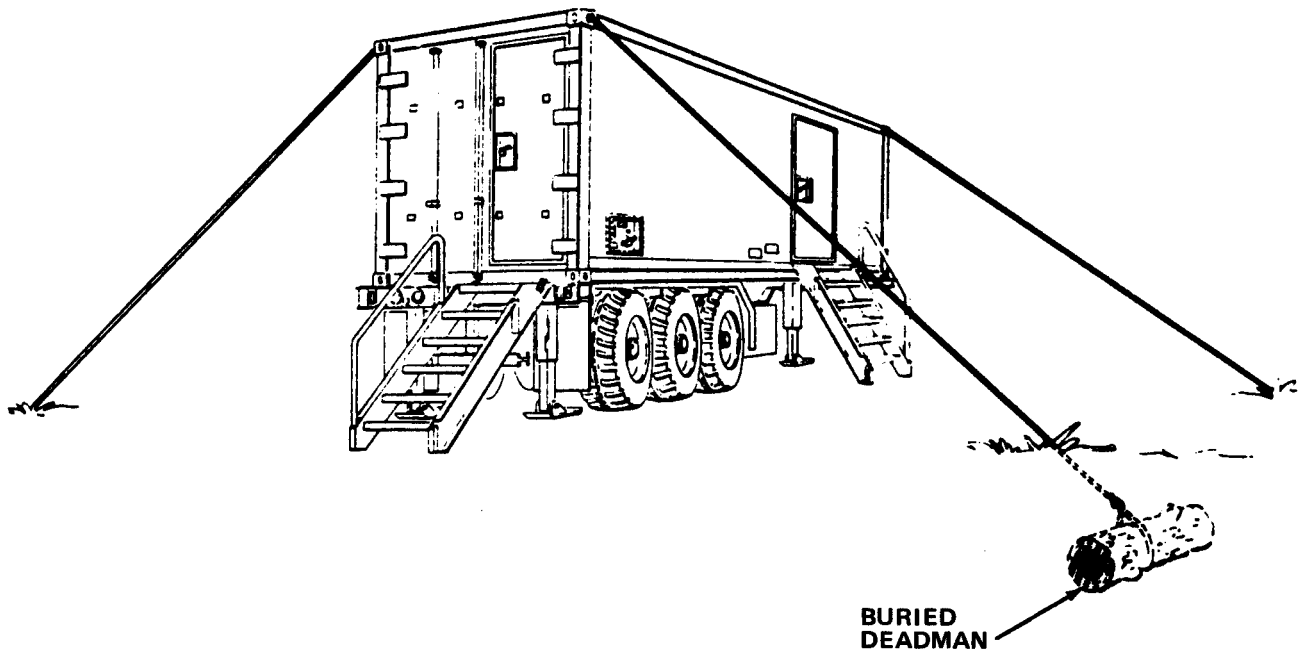
NOTE

Damage to container permitting light leaks, water, or dirt entry must be temporarily repaired using available material on hand. Maintenance personnel will conduct permanent repairs; however, crew must maintain operational capability of Section.

1.2.4.1 OPERATION IN HIGH WIND OR STORM CONDITIONS

- a. Relocate van body if trees or structures present hazard.

**SUGGESTED METHOD OF ANCHORING THE SECTION IN HIGH WINDS**



- b. Secure van body corners at lifting eyes to deadmen or substantial objects.
- c. Remove all loose objects from area.

1.2.4.2 OPERATION **IN** COLD WEATHER

- a. The operation of the internal equipment is performed within environmentally controlled conditions; however, the main power supply cable and ground cable, in extreme cold, will become hard, brittle, and difficult to handle. Be careful when handling the cables when connecting them to the van body so that kinks and unnecessary loops will not result in permanent damage.
- b. Make certain that connections and cable receptacles on the outside of the van body are free of frost, snow, and ice.
- c. When van body heaters are not operating or when van body is being transported, liquid consumable supplies may freeze, break their containers, then melt, and ruin equipment or documents.
- d. Drain water tank any time the heaters are inoperative or power loss is expected.

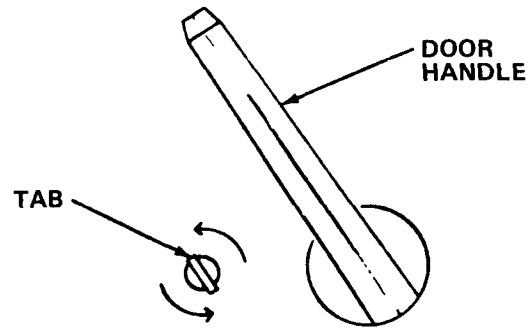
1.2.4.3 OPERATION **IN** EXTREME HEAT. The operation of the internal equipment is performed within environmentally controlled conditions; however, during transportation or when air-conditioning units are not operating, consumable supplies may suffer reduced shelf life and internal components may have accelerated deterioration of gaskets, seals, or insulation.

1.2.4.4 OPERATION **IN** TROPICAL CONDITIONS. Fungi, mildew, or mold will form on and in equipment, documents, and supplies if internal environmental control equipment is not operating and outside heat and humidity are allowed to enter the van body.

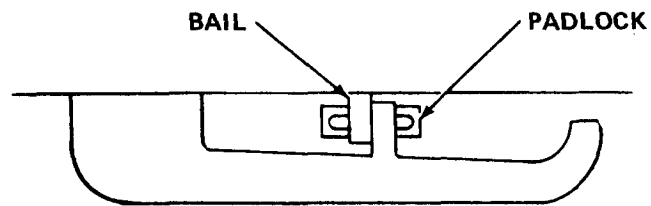
1.2.4.5 OPERATION **IN** DESERT CONDITIONS. Dust, grit, and sand will ruin supplies, equipment, and documents. Extreme care must be taken to prevent dust, grit, and sand from entering into the van body. Air filters will be changed whenever airflow is restricted, and cleaning of van body interior must be conducted more frequently than specified by PMCS schedules.

1.2.4.6 EMERGENCY PROCEDURES. There are no specific emergency procedures for operation of the van body. During power failures, manual operation of components will require the crew to reference the appropriate equipment chapters to determine if limitations are imposed on specific equipment.





INSIDE FRONT VIEW



OUTSIDE TOP VIEW

1. 2. 4. 7 EMERGENCY MEANS OF EXIT. In the event personnel are locked in the van body, the tab may be turned to the left until the bail on the padlock falls free. The door handle is now free to turn.

## Section III. OPERATOR'S MAINTENANCE INSTRUCTIONS

### 1.3.1 LUBRICATION INSTRUCTIONS

a. Lubrication instructions for the plate process Section are contained in LO 5-3610-259-12, Lubrication Order, Topographic Support System, Plate Process Section. The intervals and man-hours specified in the Lubrication Order are based on normal operations. During inactive periods, lubrication periods may be extended with adequate preservation.

b. Topographic equipment and all optical equipment require special care in lubrication. When a specified lubricant is called for, substitutions are not authorized. Minimum amounts of lubricant are to be used and all excess lubricant is to be immediately removed. Spray lubricants must not be used in the vicinity of optical equipment unless optics are completely protected. No lubricant is to be applied unless a thorough cleaning is conducted first to remove dirt, dust or abrasive material.

c. Be sure that you refer to the appropriate chapter before any equipment is stored after use, that the temperature has stabilized, and that required lubrication after use is accomplished.

### 1.3.2 OPERATOR'S TROUBLESHOOTING PROCEDURES

a. Operator's troubleshooting for the section consists of being sure switches and circuit breakers are correctly positioned and blackout switches are properly adjusted. Specific equipment malfunctions are covered in the chapter for that equipment. Air-conditioning/heating troubleshooting procedures are covered in TM 5-4120-367-14. Exact circumstances of any equipment malfunction must be carefully noted by the operator to aid in corrective action by maintenance personnel.

b. The table lists the common malfunctions which you may find during operation or maintenance of the Plate Process Section. You should perform the tests/inspections and corrective actions in the order listed.

THIS MANUAL CANNOT LIST ALL THE POSSIBLE MALFUNCTIONS OR EVERY POSSIBLE TEST/INSPECTION AND CORRECTIVE ACTION. IF A MALFUNCTION IS NOT LISTED OR CORRECTED BY A LISTED CORRECTIVE ACTION, NOTIFY YOUR SUPERVISOR.

**Table 1-3. OPERATOR' S TROUBLESHOOTING**

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
-------------	--------------------	-------------------

1. NO ELECTRICAL POWER TO SECTION.

WARNING

Death or serious injury may result. Do not perform any electrical maintenance or make electrical connections or disconnections at main power receptacle when power cable is energized.

Step 1. Observe voltage and frequency for phases A, B, and C. Read  $115 \pm 5$  V,  $60 \pm 1$  Hz.

(a) If voltage and frequency are correct, proceed to step 2.

(b) **If** voltage and frequency are incorrect, notify power supply supervisor.

CAUTION

Do not energize section if voltage or frequency is not correct. Damage to equipment may result.

Step 2. Press phase test switch on power panel for A, B, and C.

(a) If phases A, B, and C are correct, proceed to step 3.

(b) If incorrect phase lamp lights, notify power supply supervisor.

CAUTION

Do not energize section if incorrect phase lamp lights. Damage to equipment may result.

Step 3. Check safety switch position.

(a) If safety switch is on, proceed to step 4.

(b) If safety switch is off, turn on.

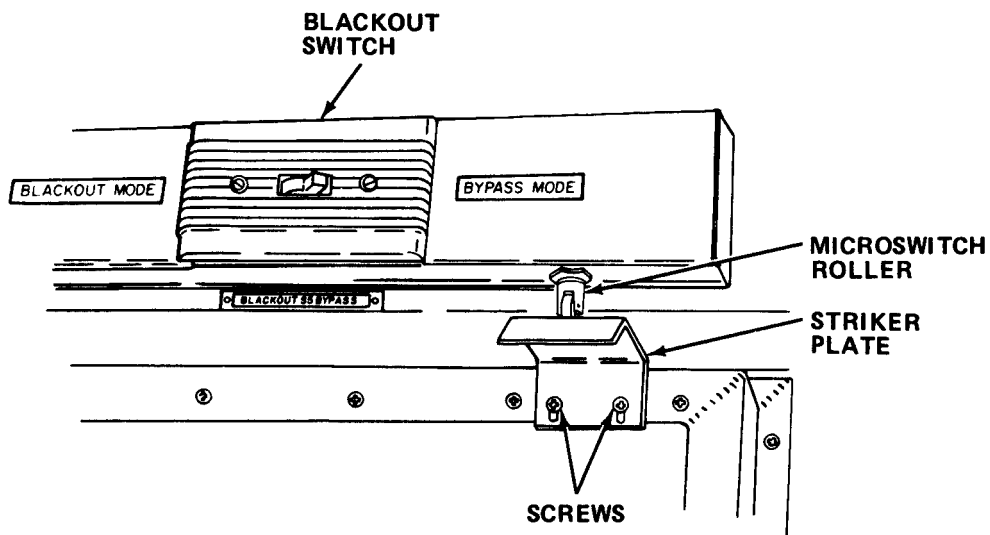
**Table 1-3. OPERATOR'S TROUBLESHOOTING (Cont)**

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
1. NO ELECTRICAL POWER TO SECTION - Cont	Step 4. Check main circuit breaker position.	(a) If circuit breakers is ON, refer to direct/general support maintenance. (b) If circuit breaker is OFF, turn ON. (c) If circuit breaker trips repeatedly, notify power supply supervisor.
2. NO ELECTRICAL POWER TO EQUIPMENT.	Step 1. Check equipment power switch.	(a) If power switch is on, proceed to step 2. (b) If power switch is off, turn on.
	Step 2. Check power cord.	(a) If power cord is plugged in, proceed to step 3. (b) If power cord is unplugged, plug in.
	Step 3. Inspect circuit breaker panel for breakers in OFF position.	(a) If all circuit breakers are ON, refer to organizational maintenance. (b) <b>If any circuit breakers are OFF, turn ON.</b>

**Table 1-3. OPERATOR'S TROUBLESHOOTING (Cont)**

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
-------------	--------------------	-------------------

3. BLACKOUT SWITCH DOES NOT OPERATE.



- Step 1. Check blackout switch position.
- If switch is on, proceed to step 2.
  - If switch is off, reset switch to BLACKOUT.
- Step 2. Check to see that striker plate contacts roller on microswitch.
- Loosen screws, and move plate up or down until microswitch operates.
  - If blackout switch still fails to operate, refer to organizational maintenance.

1.3.3 MAINTENANCE PROCEDURES

I N D E X

PROCEDURE	PARAGRAPH
Repl ace Fluorescent Ceiling Lamp . . . . .	1. 3. 3. 1
Service Ventilati on Ducts. . . . .	1. 3. 3. 2
Repl ace Bl ackout/Dome Li ght . . . . .	1. 3. 3. 3

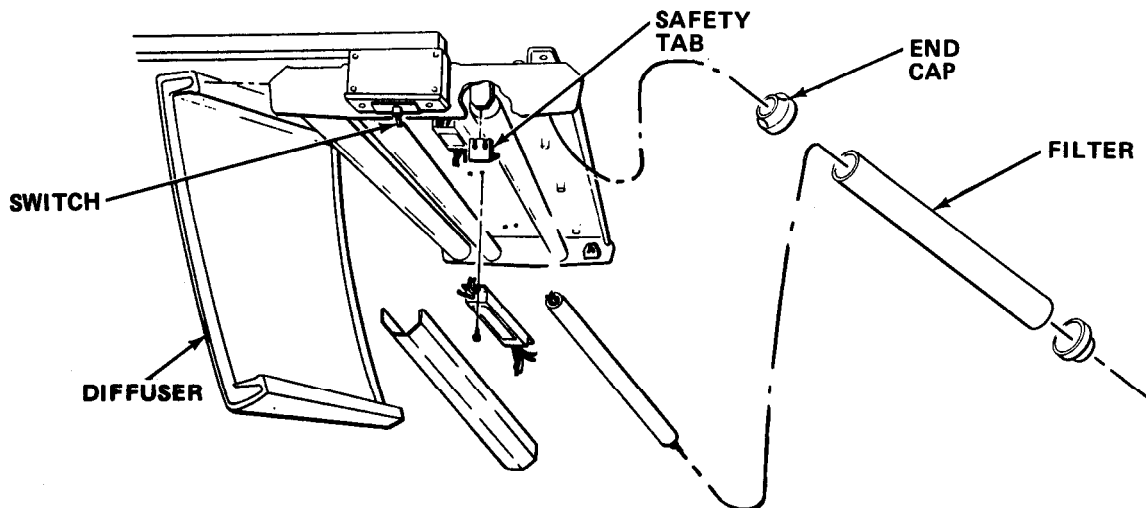
1. 3. 3. 1 REPLACE FLUORESCENT CEILING LAMP.

TOOLS: None  
SUPPLIES: Fluorescent Ceiling Lamp

WARNING

DEATH OR SERIOUS INJURY MAY RESULT IF  
POWER IS LEFT ON WHILE SERVICING LAMP.  
TURN CIRCUIT BREAKER AND SWITCH OFF.

1. Turn ci rcui t breaker and swi tch off.



2. Gently pull di ffuser from li ght bracket, and place di ffuser out of the way to prevent damage.
3. Remove safety tab from lamp socket.

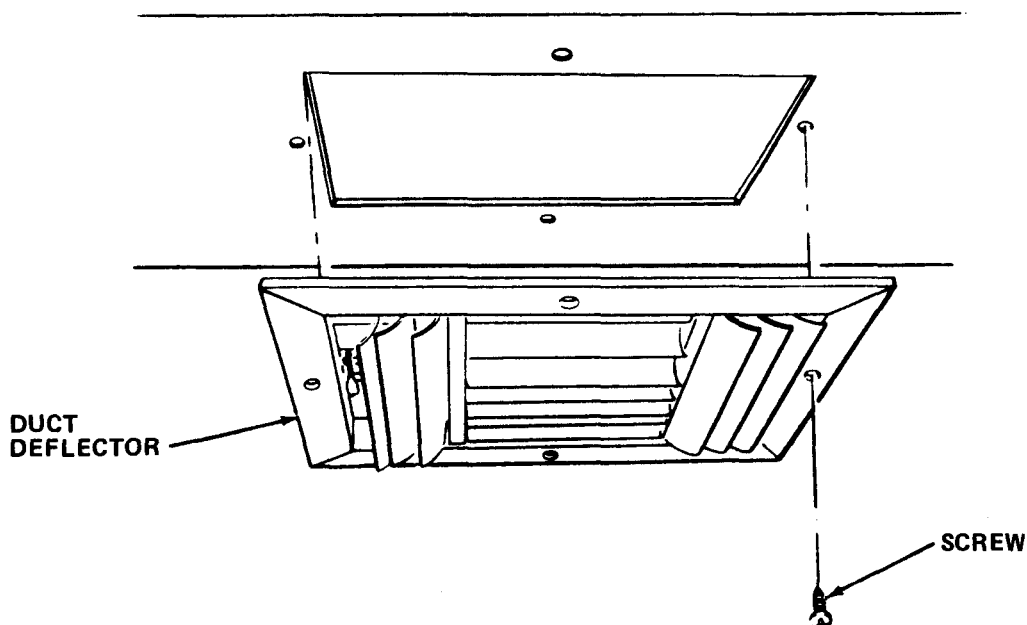
4. Rotate defective lamp until lamp prongs are free from slot and remove lamp.
5. Remove filter and end cap; reinstall on *new* lamp.
6. Insert new lamp prongs into slot and rotate lamp 90 degrees.
7. Reinstall safety tab into lamp socket.
8. Reinstall diffuser.
9. Turn power on.

1.3.3.2 SERVICE VENTILATION DUCTS.

TOOLS: Vacuum Cleaner  
 Cross-Tipped Screwdriver

SUPPLIES: None

1. Cover equipment to prevent dust from entering equipment.
2. Close all doors and cabinets.
3. Remove any documents or other work that may be damaged by dirt/dust.
4. Turn off air conditioners/heaters.



5. Remove four screws from each ventilation duct deflector.
6. Remove all duct deflectors.
7. Vacuum dirt or dust from deflector louvers.

8. Insert vacuum cleaner probe into ventilation duct at each deflector hole, and vacuum as far as probe will reach.
9. Reinstall deflectors and secure with four screws.
10. Vacuum any dislodged dirt or dust from interior of section.
11. Turn on air conditioners/heaters.
12. Remove covers from equipment for operation.

1.3.3.3 REPLACE BLACKOUT/DOME LIGHT.

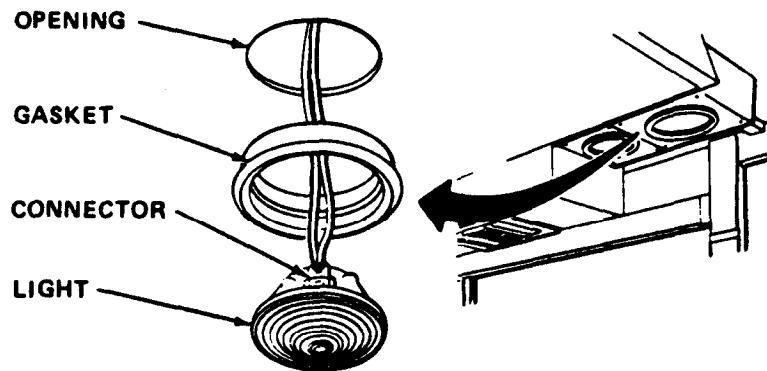
TOOLS: None

SUPPLIES: Lamp (12 V)

Silicone Spray, (Item 60, Appendix E)

NOTE

Blackout light and dome light are sealed units. No bulb replacement is possible. Complete light must be replaced.



1. Push light and gasket up into opening.
2. Tilt and remove light and gasket from opening.
3. Disconnect light from connector.
4. Connect new light to connector.
5. Reinstall gasket in opening.

NOTE

The use of silicone spray on the gasket will help to position light.



6. Position light in gasket and push in.
7. Test light.



## Section IV. ORGANIZATIONAL MAINTENANCE INSTRUCTIONS

**1.4.1 REPAIR PARTS; SPECIAL TOOLS; TEST, MEASUREMENT, AND DIAGNOSTIC EQUIPMENT; AND SUPPORT EQUIPMENT**

1.4.1.1 COMMON TOOLS AND EQUIPMENT. For authorized common tools and equipment, refer to the Modified Table of Organization and Equipment (MTOE) applicable to your unit.

1.4.1.2 SPECIAL TOOLS; TEST, MEASUREMENT, AND DIAGNOSTIC EQUIPMENT; AND SUPPORT EQUIPMENT. No special tools; test, measurement, and diagnostic equipment; or support equipment are required for the repair of this Section at the Organizational level of maintenance. Refer to TM 5-3610-259-24P. Individual equipment requirements are covered in the specific equipment chapters.

1.4.1.3 REPAIR PARTS. Repair parts for this equipment are listed in TM 5-3610-259-24P, Repair Parts and Special Tools List (RPSTL), covering Organizational, Direct Support, and General Support maintenance for this equipment.

1.4.2 SERVICE UPON RECEIPT. The section may be received mounted on a trailer chassis, as a van body for mounting on an available trailer/transporter, or on site. Inspection of the trailer chassis is covered in TM 5-2330-305-14. Inspection of the air conditioners/heaters is covered in TM 5-4120-367-14.

- a. Visually inspect the van body exterior starting at the rear to cover rear, curbside, roadside, front, top, and bottom. Inspect for damage, tears, breaks, or corrosion.
- b. Enter van body and inspect for broken equipment, tool boxes, or chairs, or equipment loose and not secured.
- c\* Close doors/vents to determine if light leaks exist.
- d. Inspect doors for damage, torn or rotted seals, and tightness of closure.
- e. Inspect interior for evidence of water damage, fungi, mildew, or corrosion.
- f. Inventory section contents against Components of End Item and Basic Issue Items Lists (Appendix C).
- g. Inventory consumable supplies contained in section as shown in Appendix E.
- h. Conduct operational checks on equipment in accordance with the chapters in this manual when operators are available and power can be safely provided to the van body.
- i. Report damage or discrepancies in accordance with AR 735-11 and AR 735-11-2.

**1.4.3 ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES**

- a. Always keep in mind the WARNINGS and CAUTIONS when performing PMCS. Table 1-3 lists the PMCS procedures to be performed. Be sure to perform the PMCS at the frequency indicated by the INTERVAL codes in the table.
- b. If your equipment fails to operate, troubleshoot with the proper equipment. Report any deficiencies in accordance with DA PAM 738-750.

NOTE

**If** the equipment must be kept in continuous operation, check and service only those items that can safely be checked and serviced without disturbing operation. Make the complete checks and services when the equipment can be shut down.

- c. The numbers found in the ITEM NUMBER column shall be used as a source of item numbers for the TM ITEM NUMBER column on DA Form 2404, Equipment Inspection and Maintenance Worksheet, in recording the results of PMCS.
- d. Preventive maintenance checks and service for the air conditioners/heaters are contained in TM 5-4120-367-14.
- e. List of tools and materials required for PMCS is as follows:

<u>Item</u>	<u>Quantity</u>
Hand Wire Brush	1 ea
8 in. Adjustable Wrench	1 ea
Cross-Tipped Screwdriver	1 ea
Flat-Tipped Screwdriver	1 ea
Wrench Set	1 ea
Scraper	1 ea
Multimeter	1 ea
Cloths	ar
Electrical Insulating Tape	ar
Paint	ar
Paint Brush	1 ea
Abrasive Paper	ar
Padlock	1 ea
Air Vent Filters, Small	2 ea
Air Vent Filter, Large	1 ea

Table 1-4. ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES

B - Before  
D - During  
A - After

W - Weekly  
M - Monthly  
Q - Quarterly

AN - Annually  
S - Semiannually  
BI - Biennially

(Number) - Hundreds of Hours

ITEM NO.	INTERVAL	ITEM TO BE INSPECTED	PROCEDURE
<u>VAN BODY</u>			
1	M	<u>Service Air Conditioner/Heater.</u> Refer to TM 5-4120-367-14 for preventive maintenance checks and services.	
2	M	<u>Service Lighting System.</u>	<div> <p>The diagram shows two electrical components. On the left is a larger panel with a main circuit breaker at the top, indicated by an arrow and the text 'CIRCUIT BREAKER OFF'. Below it are several smaller switches. On the right is a smaller panel with a safety switch, also indicated by an arrow and the text 'SAFETY SWITCH OFF'. The safety switch has 'ON' and 'OFF' labels and a locking mechanism.</p> </div> <p style="text-align: center;"><u>WARNING</u></p> <p>Do not open or service electrical connections, cables or switches until main power is off, and multimeter confirms circuit is not energized. Death may result from failure to observe these safety precautions.</p> <p>1. Turn off main circuit breaker. Turn off safety switch.</p>

**Table 1-4. ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES (Cont)**

B - Before                      W - Weekly                      AN - Annually                      (Number) - Hundreds of Hours  
 D - During                      M - Monthly                      S - Semiannually  
 A - After                      Q - Quarterly                      BI - Biennially

ITEM NO.	INTERVAL	ITEM TO BE INSPECTED  PROCEDURE
2	M	<u>VAN BODY</u>
		<u>Service Lighting System - Cont</u> <ol style="list-style-type: none"> <li>2. Padlock safety switch.</li> <li>3. Tighten all loose screws, bolts, and clamps.</li> <li>4. Check which switches, switch plate outlets, receptacles, and posts require repair.</li> <li>5. Check for loose screws and nuts on ceiling, console lights, circuit breaker panels, and conduits.</li> <li>6. Remove padlock.</li> <li>7. Turn on power.</li> </ol>

Table 1-4. ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES (Cont)

B - Before  
D - During  
A - After

W - Weekly  
M - Monthly  
Q - Quarterly

AN - Annually  
S - Semiannually  
BI - Biennially

(Number) - Hundreds of Hours

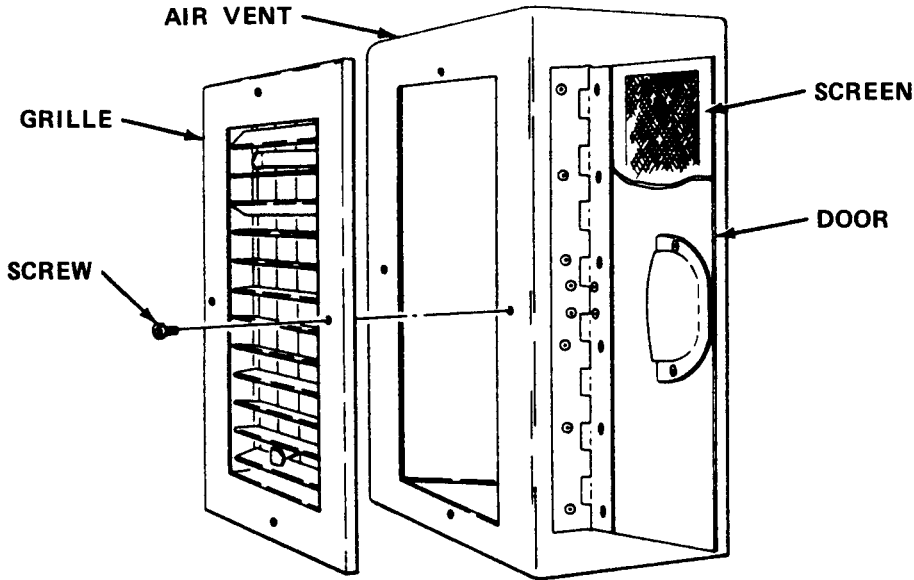
ITEM NO.	INTERVAL	ITEM TO BE INSPECTED  PROCEDURE
5	M	<p><b><u>VAN BODY</u></b></p> <p>SERVICE AIR VENT.</p>  <ol style="list-style-type: none"> <li>1. Remove four screws from front of grille.</li> <li>2. Remove front grille.</li> <li>3. Using vacuum cleaner, clean screens on side doors.</li> <li>4. Vacuum inside of air vent.</li> <li>5. Reinstall grille with four screws.</li> </ol>

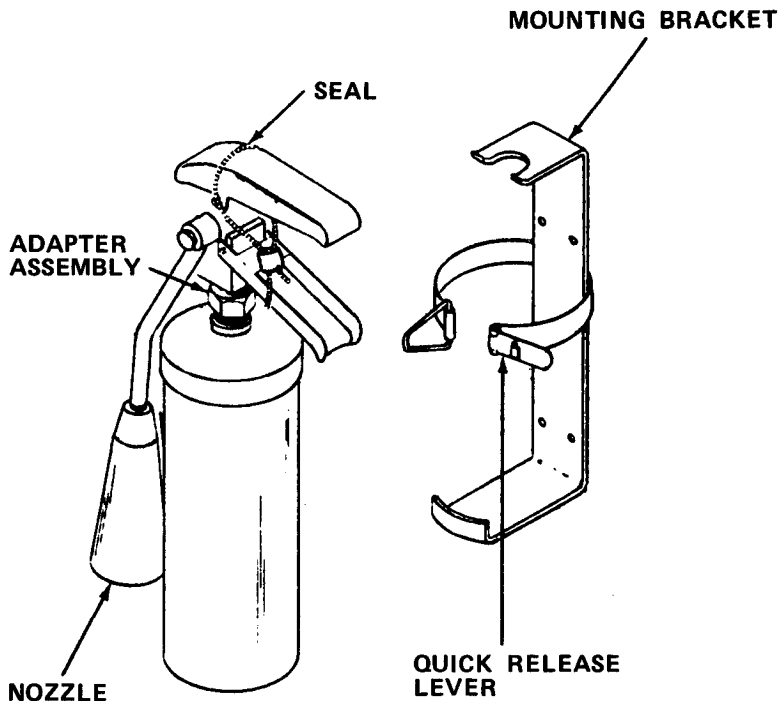
Table 1-4. ORGNIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES (Cont)

B - Before  
D - During  
A - After

W - Weekly  
M - Monthly  
Q - Quarterly

AN - Annually  
S - Semiannually  
BI - Biennially

(Number) - Hundreds of Hours

ITEM NO.	INTER-VAL	ITEM TO BE INSPECTED	PROCEDURE
<b><u>VAN BODY</u></b>			
6	M	INSPECT FIRE EXTINGUISHERS.	 <p>                     1. Remove from mounting bracket. Check free movement of quick release lever.                      2. Inspect nozzle and adapter assembly for damage.                      3. Inspect seal. Be sure it is not broken.                 </p>



**1.4.4 ORGANIZATIONAL TROUBLESHOOTING PROCEDURES**

a. Organizational troubleshooting procedures cover the most common malfunctions that may be repaired at the organizational level. Repair or adjustment requiring specialized equipment is not authorized unless such equipment is available. Troubleshooting procedures used by the operator should be conducted in addition to the organizational troubleshooting procedures.

b. This manual cannot list all the possible malfunctions or every possible test/inspection and corrective action. If a malfunction is not listed or corrected by a listed corrective action, notify your supervisor.

For unidentified malfunctions, use the facing schematic or the foldout located at the end of this manual for further fault analysis.

d. If any component of the Plate Process Section does not power up when turned on, verify that 120 V ac is present at the receptacle. If voltage is not present, plug equipment into receptacle with power available and proceed with equipment troubleshooting. Perform no-power troubleshooting procedures for dead receptacle (Table 1-5).

**Table 1-5. ORGANIZATIONAL TROUBLESHOOTING**

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
-------------	--------------------	-------------------

**WARNING**

Electrical shock hazard. Be sure power is off when checking continuity at troubleshooting points. Death or serious injury could result from failure to do so.

1. FLUORESCENT CEILING LAMP IS INOPERATIVE.

Step 1. Check for continuity of fluorescent lamp switch.

(a) **If** continuity exists, proceed to step 2.

(b) If continuity does not exist, replace switch (paragraph 1.4.5.3).

**Table 5. ORGANIZATIONAL TROUBLESHOOTING (Cont)**

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
1. FLUORESCENT CEILING LAMP IS INOPERATIVE - Cent	Step 2. Check for continuity of lamp ballast.	(a) If continuity exists, proceed to step 3. (b) If continuity does not exist, replace lamp ballast (paragraph 1.4.5.1)
	Step 3. Check for shorts in RF filter.	Replace RF filter (paragraph 1.4.5.2).
2. VENTILATION FAN IS INOPERATIVE.	Check on/off switch for continuity.	(a) <b>If</b> continuity exists, replace fan (Paragraph 1.4.5.7). (b) <b>If Continuity</b> does not exist, replace switch.
3. EMERGENCY LIGHTS ARE INOPERATIVE.	Press in test indicator.	<b>If</b> lamps do not light, replace emergency light assembly (paragraph 1-4.5.9).
4. NO POWER TO EQUIPMENT.	Step 1. Check circuit breaker ON/OFF position.	(a) If circuit breaker is ON, proceed to step 2. (b) If circuit breaker is OFF, turn ON. (c) If circuit breaker trips repeatedly, notify power supply supervisor.

**Table 1-5. ORGANIZATIONAL TROUBLESHOOTING (Cont)**

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
4. NO POWER TO EQUIPMENT - Cont	Step 2. Check circuit breaker input for 120 V ac.	(a) If input voltage is present, proceed to step 3. (b) If input voltage is not present, refer to direct/general support maintenance for repair or replacement of defective wiring.
	Step 3. Check circuit breaker output for 120 V ac.	(a) If output voltage is present, proceed to step 4. (b) If output voltage is not present, refer to direct/general support maintenance for circuit breaker replacement (paragraph 1.5.3.5).
	Step 4. Remove receptacle and check for 120 V ac input.	(a) <b>If</b> present, replace receptacle (paragraph 1.4.5.5). (b) <b>If</b> not present, refer to direct/general support maintenance for repair or replacement of defective wiring.

1.4.5 MAINTENANCE PROCEDURES. This section contains the step-by-step procedures for performing Organizational Maintenance for the Van Body. Personnel required are listed only if the task requires more than one. If personnel are not listed, it means one person can do the task.

INDEX

PROCEDURE	PARAGRAPH
Replace Fluorescent Lamp Ballast . . . . .	•1.4.5.1
Replace Radio Frequency (RF) Filter . . . . .	1.4.5.2
Replace Fluorescent Light Switch . . . . .	1.4.5.3
Replace On/Off Switch . . . . .	1.4.5.4
Replace Receptacle . . . . .	1.4.5.5

**1.4.5 MAINTENANCE PROCEDURES (Cont)**

**INDEX (Cont)**

Replace Telephone Binding Post Assembly . . . . . 1.4.5.6  
Replace Ventilation Fan . . . . . 1.4.5.7  
Replace Ventilation Fan Cover . . . . . 1.4.5.8  
Replace Emergency Light . . . . . 1.4.5.9  
Repair Blackout Curtain . . . . . 1.4.5.10  
Repair Van Body Skin (Temporary) . . . . . 1.4.5.11  
Replace Tie-Down Socket . . . . . 1.4.5.12  
Replace Level Indicator . . . . . 1.4.5.13  
Replace Air Vent Door . . . . . 1.4.5.14  
Repair Personnel Ladder . . . . . 1.4.5.15

1.4.5 .1 REPLACE FLUORESCENT LAMP BALLAST.

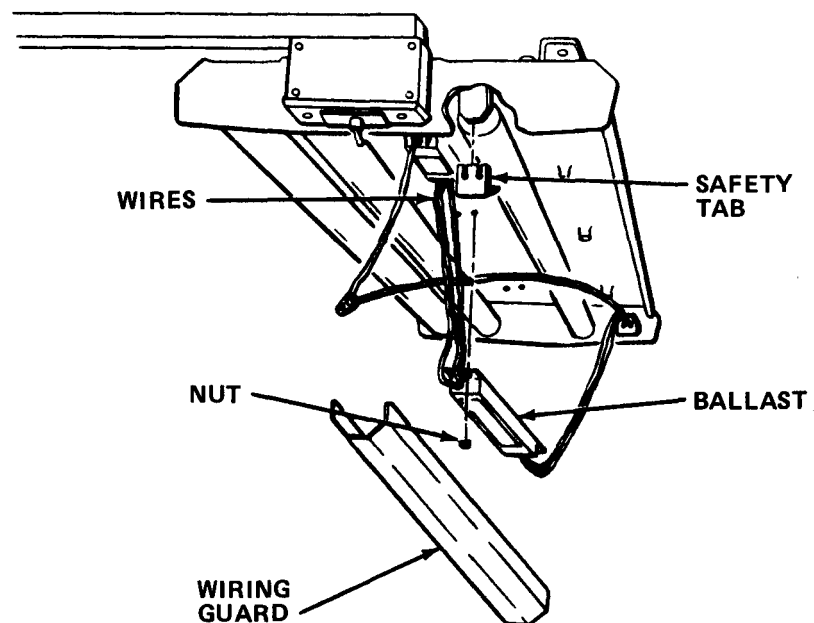
TOOLS : Tool Kit, Electronic

SUPPLIES: Lamp Ballast  
Wire Ties  
Wire Nuts

**WARNING**

DEATH OR SERIOUS INJURY MAY RESULT UNLESS OVERHEAD LIGHT SWITCH IS TURNED OFF BEFORE WORKING ON LIGHT FIXTURE.

1. Turn overhead light switch off.
2. Remove diffuser from light fixture.
3. Remove safety tabs and lamps. Place in diffuser.
4. Squeeze light wiring guard and remove.
5. Remove wire ties as required.



6. Label wires from ballast for reference.
7. Remove black and white wires from wire nuts.
8. Cut lamp receptacle lead-in wires close to defective ballast to eliminate excess wiring.
9. Remove nut and ballast.
10. Cut new ballast lead-in wires.
11. Label new ballast wires to correspond to old ballast wire labels.
12. Replace ballast and secure with nut.
13. Reconnect black and white ballast wires to wire nut connection.
14. Reconnect lamp receptacle wires to new ballast with wire nuts.
15. Remove labels.
16. Install new wire ties.
17. Be sure wires are free of kinks and do not interfere with placement of wire guard.
18. Reinstall wire guard.

19. Be sure lamp filter is installed over lamp before reinstalling lamp.
20. Reinstall lamps and safety tabs.
21. Reinstall diffuser.
22. Turn on power.

### 1.4.5.2 REPLACE RADIO FREQUENCY (RF) FILTER.

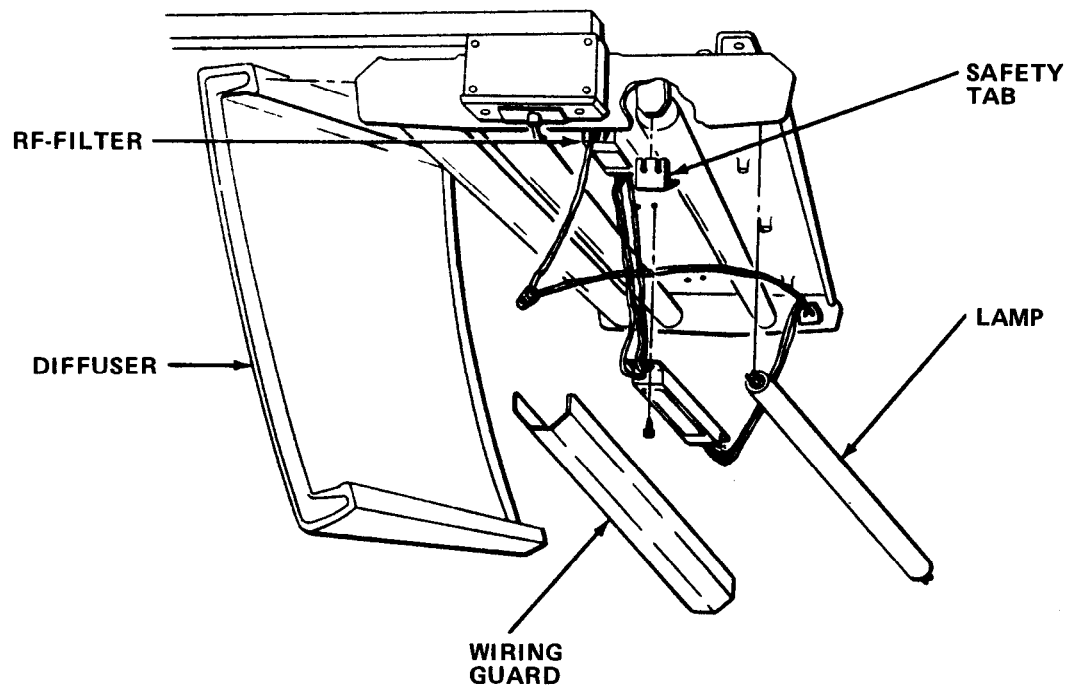
TOOLS : Tool Kit, Electronic

SUPPLIES: RF Filter  
Wire Ties  
Wire Nuts

#### WARNING

DEATH OR SERIOUS INJURY MAY RESULT UNLESS OVERHEAD LIGHT SWITCH IS TURNED OFF BEFORE WORKING ON LIGHT FIXTURE.

1. Turn overhead light switch off.
2. Remove diffuser from light fixture.
3. Remove safety tabs and lamps. Place in diffuser.
4. Squeeze light wiring guard and remove.
5. Remove wire ties as required.



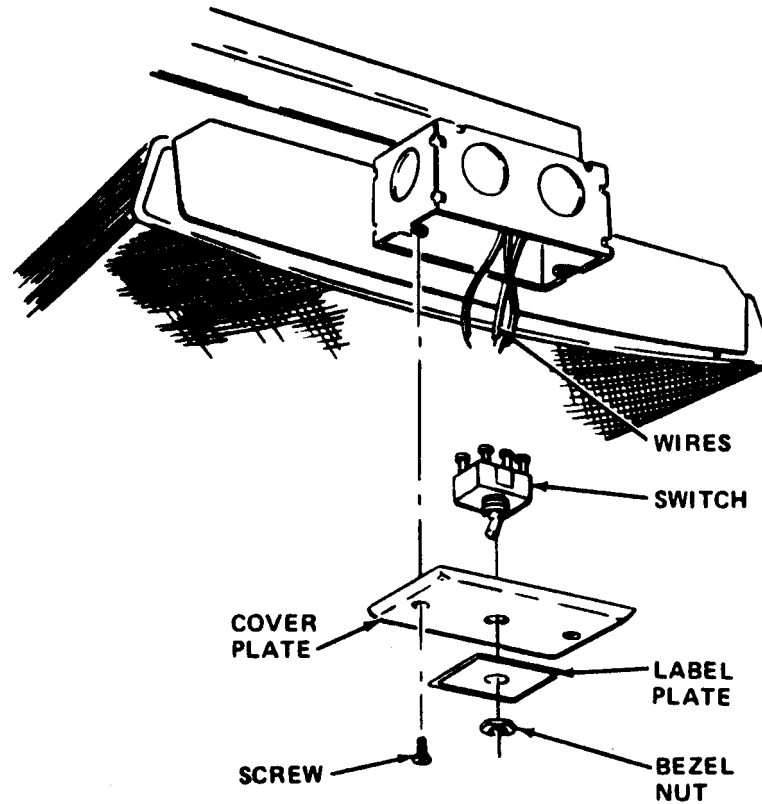
6. Label wires to filter.
7. Remove wire nuts and disconnect filter wires.
8. Remove screws and old filter.
9. Install new filter. Secure with screws.
10. Reconnect filter wires and secure with wire nuts.
- 11.** Remove labels.
12. Install new wire ties.
13. Be sure wires are free of kinks and do not interfere with placement of wire guard.
14. Reinstall wire guard.
15. Reinstall lamps and safety tabs.
16. Reinstall diffuser.
17. Turn light switch on.



1. 405. 3 REPLACE FLUORESCENT LIGHT SWITCH.

TOOLS : Tool Kit, Electronic  
Auxiliary Lighting

SUPPLIES: Switch Assembly  
Electrical Tape

WARNING

DEATH OR SERIOUS INJURY MAY OCCUR IF LIGHT SWITCH AND LIGHTING CIRCUIT BREAKER ARE NOT TURNED OFF BEFORE WORKING ON LIGHT SWITCH.

**NOTE**

Auxiliary lighting is required to perform this task.

1. Turn lighting circuit breaker off.

2. Remove two screws and cover plate.
3. Note position of notch on label plate and remove bezel nut and label plate.
4. Remove tape.
5. Label wires and disconnect from switch.
6. Install new switch and reconnect wires.
7. Tape switch connections.
8. Insert switch through cover plate and label plate. Be sure label plate is in same direction as when removed. Secure with bezel nut.
9. Align cover plate with holes and secure with two screws.
- 10.** Turn lighting circuit breaker on.

1. 4. 5. 4 REPLACE ON/OFF SWITCH.

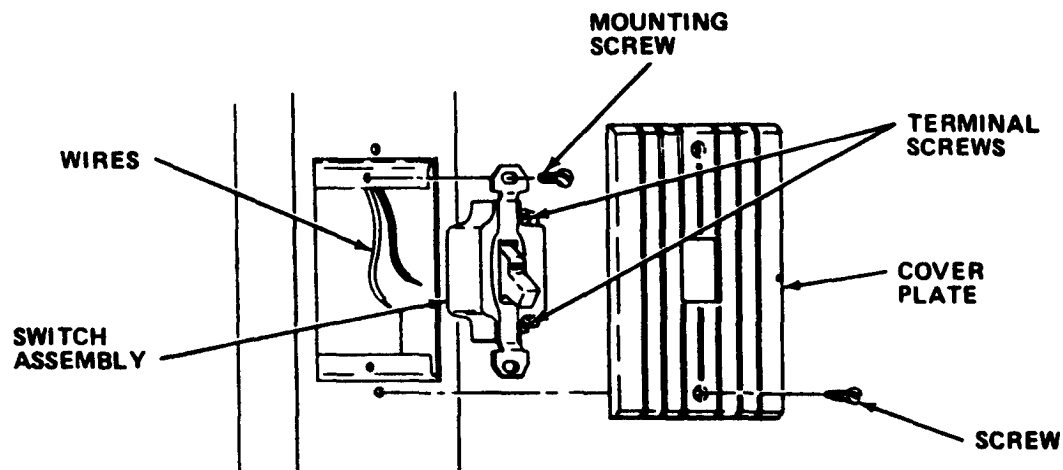
TOOLS: Flat-Tipped Screwdriver  
Multimeter

SUPPLIES: Switch

## WARNING

DEATH OR SERIOUS INJURY MAY OCCUR IF APPROPRIATE CIRCUIT BREAKER IS NOT TURNED OFF BEFORE WORKING ON SWITCH.

1. Turn off appropriate circuit breaker.



2. **Remove two screws.**
3. Remove cover plate.
4. Remove mounting screws.
5. Pull switch assembly from wire guide to gain access to wires.
6. Perform voltage check.
7. Loosen terminal screws. Then disconnect wires.
8. Reconnect wires to new switch, then tighten terminal screws.
9. Guide switch into wire guide, aligning holes.

**NOTE**

Be sure wires are not kinked or strained.

10. Reinstall mounting screws.
11. Reinstall cover plate and secure with two screws.
12. Turn circuit breaker on.

1. 4. 5. 5 REPLACE RECEPTACLE.

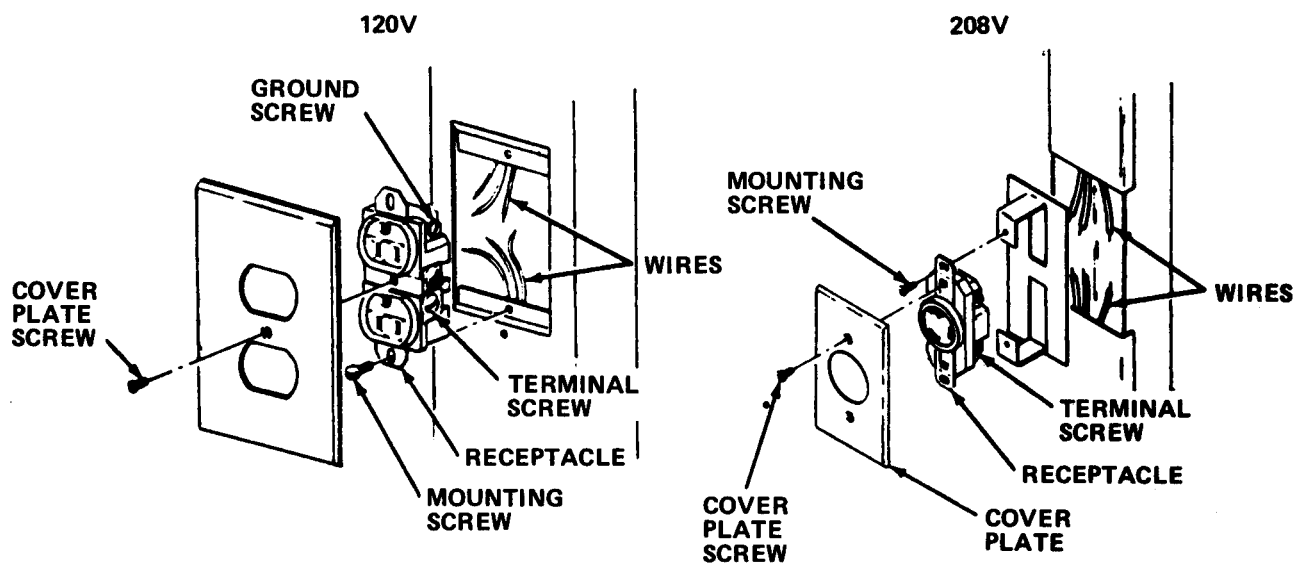
TOOLS: Flat-Tipped Screwdriver  
 Multi meter

SUPPLIES: Receptacle

WARNING

DEATH OR SERIOUS **INJURY** MAY OCCUR **IF** APPROPRIATE CIRCUIT BREAKER IS NOT TURNED OFF BEFORE WORKING ON RECEPTACLE.

1. Turn off appropriate receptacle circuit breaker.



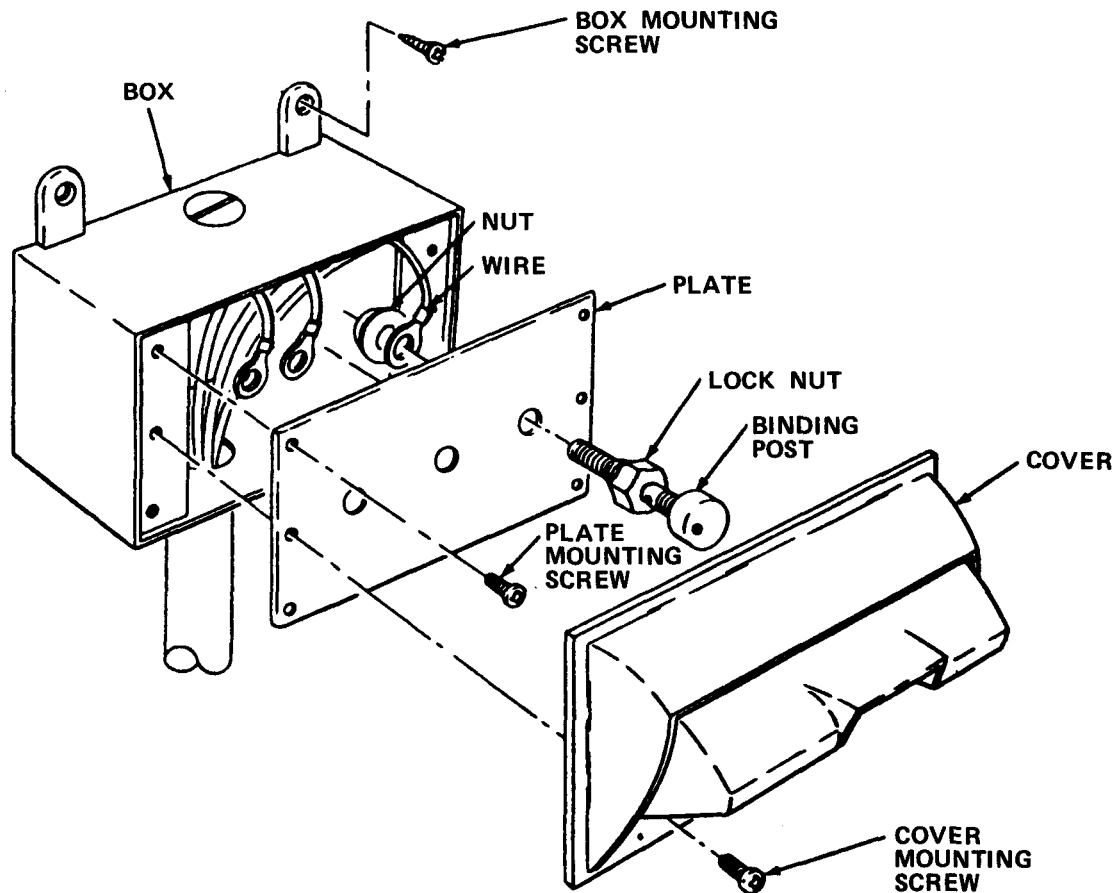
2. Check receptacle for voltage.
3. Remove cover plate screw(s).
4. Remove cover plate.
5. Remove mounting screws.
6. Withdraw receptacle to gain access to wires.
7. Loosen terminal screw and ground screw. Then disconnect wires.

8. Reconnect wires to new receptacle. Connect green (ground) wire first.
9. Install new receptacle.
10. Guide receptacle into wire guide. Be sure wires are not kinked or strained.
- 11.** Secure receptacle with screws.
12. Reinstall cover plate. Secure with screw(s).
13. Turn circuit breaker on.

1. 4. 5. 6 REPLACE TELEPHONE BINDING POST ASSEMBLY.

TOOLS: Electronic Tool Kit

SUPPLIES: Binding Post Box  
Binding Posts



1. Remove cover.
2. Remove plate mounting screws to gain access to back of plate.
3. Label wires for identification.
4. Remove nuts and wires from binding posts.
5. If required, remove box mounting screws and replace box.
6. Replace any defective binding posts. Secure wires to new posts and remove labels.
7. Reinstall plate, and secure with screws.
8. Secure cover with screws.

1.4.5.7 REPLACE VENTILATION FAN.

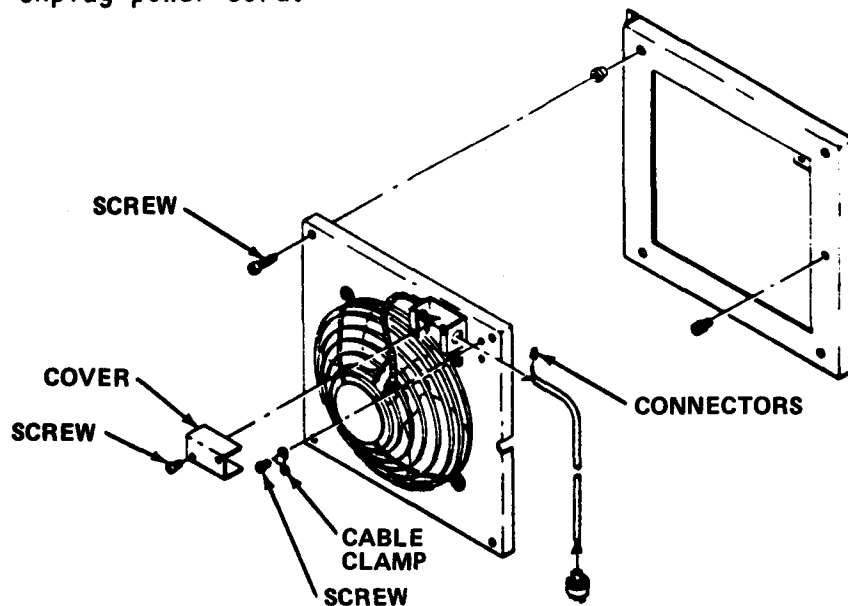
TOOLS: Tool Kit, Electronic

SUPPLIES: Fan Assembly  
Wire Nuts

WARNING

**TURN FAN SWITCH OFF AND DISCONNECT POWER CORD BEFORE WORKING ON VENTILATION FAN. DEATH OR SERIOUS INJURY COULD RESULT IF POWER IS LEFT ON.**

**1. Unplug power cord.**



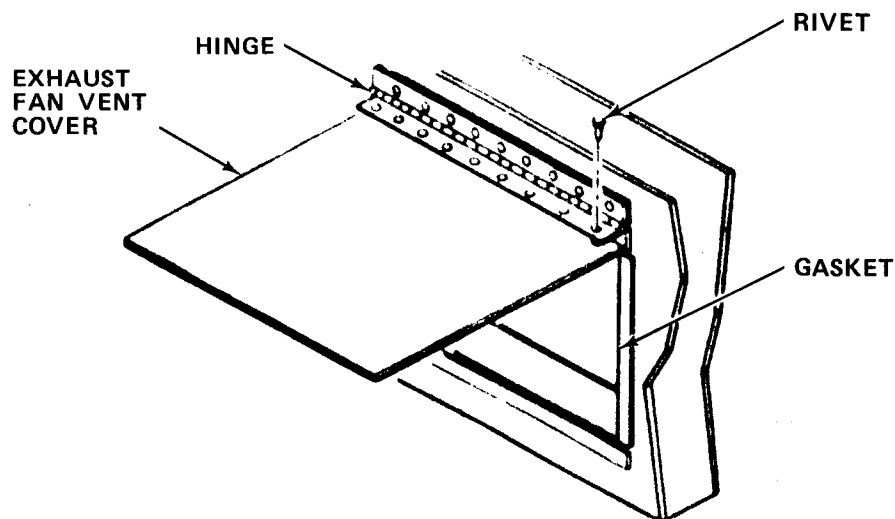
2. Remove four screws and place fan assembly on work surface.
3. Remove two screws and cable clamp.
4. Remove two screws and cover.
5. Label wires and cut connectors from wires and remove power cord from fan assembly.
6. Install power cord in new fan assembly.
7. Reconnect wires with wire nuts and remove labels.
8. Reinstall cable clamp. Secure with screws.
9. Reinstall cover. Secure with screws.
10. Reinstall fan assembly.
11. Plug in power cord.



## 1. 4. 5. 8 REPLACE VENTILATION FAN COVER.

TOOLS: Drill and Bits  
Rivet Gun  
Scraper

SUPPLIES: Rivets  
Ventilation Fan Cover  
Gasket  
Solvent PD-680  
Adhesive  
Rags



1. Drill rivets out of hinged cover to remove ventilation fan.
2. Remove fan cover.

## WARNING

DRY CLEANING SOLVENT, P-D-680, USED TO CLEAN PARTS IS POTENTIALLY DANGEROUS TO PERSONNEL AND PROPERTY. AVOID REPEATED AND PROLONGED **SKIN** CONTACT. WEAR SOLVENT-IMPERMEABLE GLOVES AND EYE/FACE PROTECTIVE EQUIPMENT WHEN **USING** SOLVENT. DO NOT USE NEAR OPEN FLAME OR EXCESSIVE HEAT. FLASH POINT OF SOLVENT IS **100°F TO 138°F (38°C TO 59°C)**.

3. Scrape gasket off van body and clean area with solvent.
4. **Secure new gasket** to van body with adhesive.
5. Align new ventilation fan cover and rivet to hinge.
6. Test cover for tightness of closure.

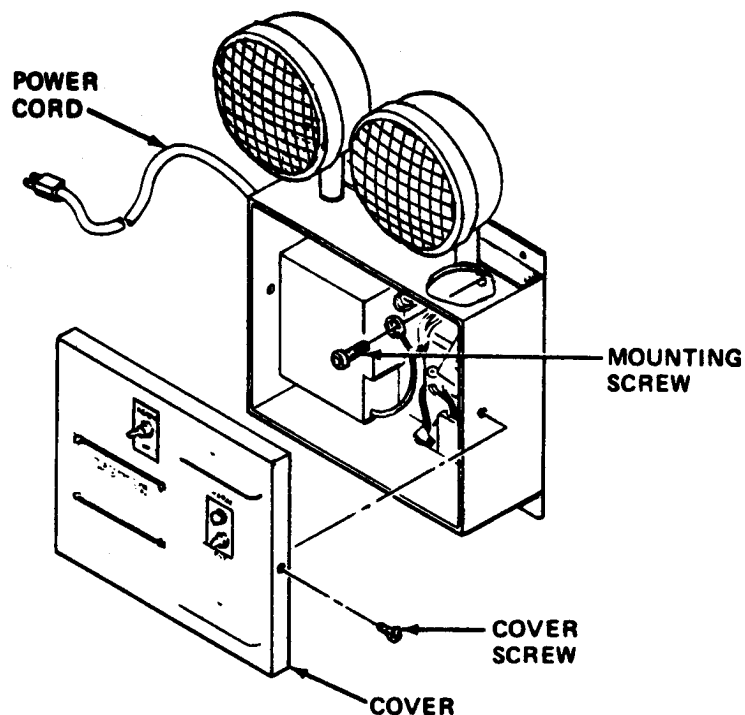
1.4.5.9 REPLACE EMERGENCY LIGHT.

TOOLS: Tool Kit, Electronic

SUPPLIES: Emergency Light

WARNING

DEATH OR SERIOUS INJURY MAY OCCUR IF POWER CORD IS NOT UNPLUGGED BEFORE SERVICING LIGHT.

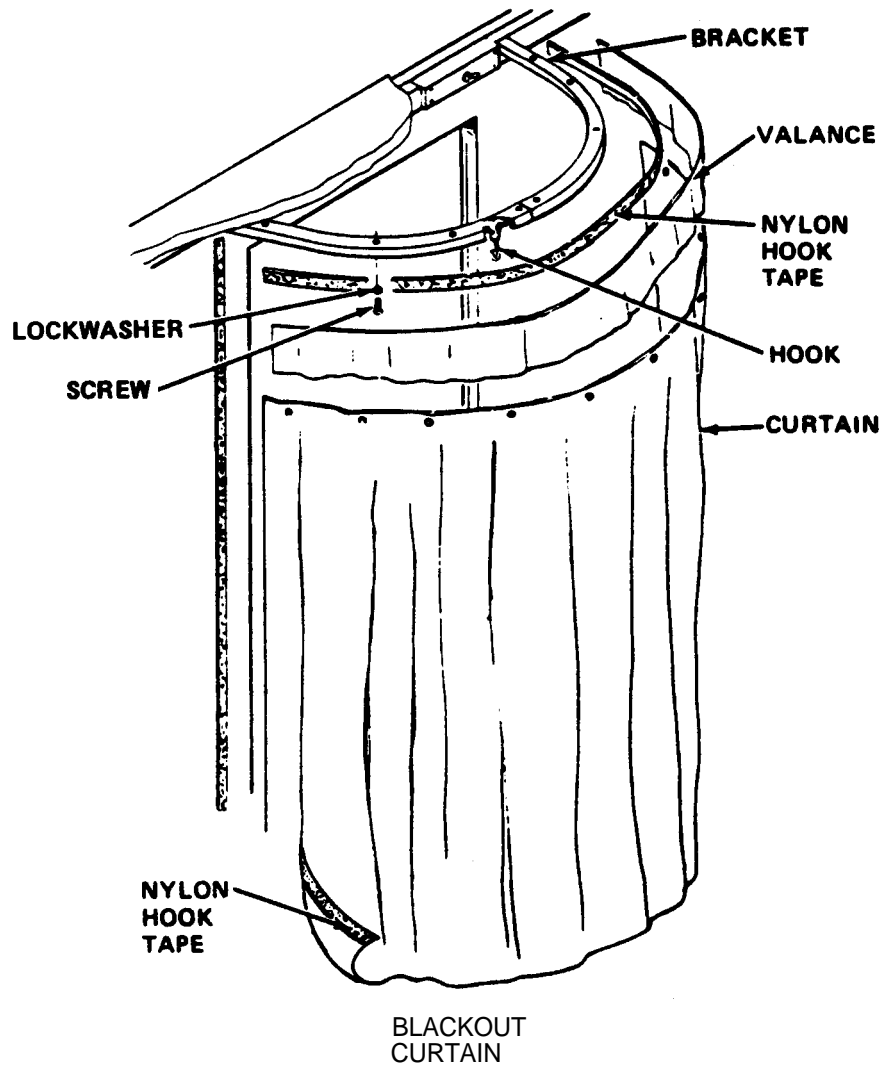


1. Unplug power cord.
2. Remove two cover screws. Move cover out of way.
3. Remove three mounting screws and remove emergency light assembly.
4. Install new emergency light assembly. Secure with three screws.
5. Secure cover with two screws.
6. Plug in power cord.
7. Push test button; check for proper light operation.

1. 4. 5. 10 REPAIR BLACKOUT CURTAIN.

TOOLS: Cross-Ti pped Screwdriver

SUPPLI ES: Hooks  
Val ance  
Curtai n  
Nyl on Hook Tape  
Adhesi ve



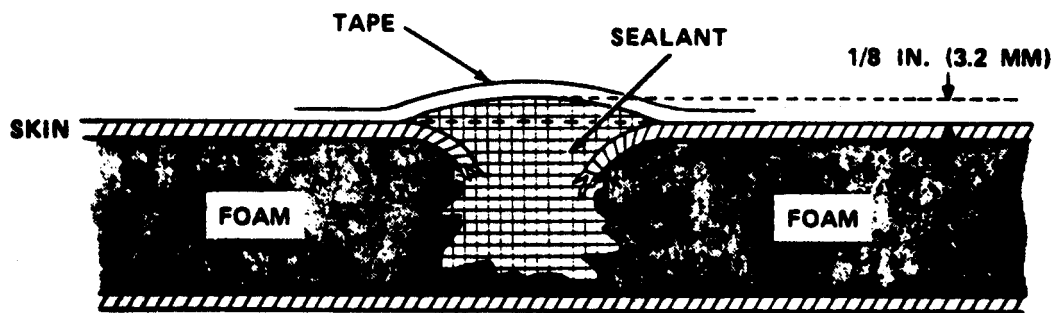
1. Remove curtain from hooks.
2. Pull curtain and valance from nylon hook tape.
3. Replace torn or rotted curtain or valance.

4. Remove screws and lock washers fastening bracket to ceiling.
5. Replace damaged hooks.
6. Reinstall bracket with hooks. Fasten with screws and lock washers.
7. Glue loose nylon hook tape to wall or bracket. Replace tape if worn out.
8. Hook curtain to bracket.
9. Attach valance.
10. Check curtain for free movement.

#### 1. 4. 5. 11 REPAIR VAN BODY SKIN (TEMPORARY).

TOOLS: Pliers  
Ball-Peen Hammer  
Scissors or Utility Knife

SUPPLIES: Cloth Duct Sealing Tape  
Silicone Sealant  
Cloth



#### WARNING

DAMAGED SHEET METAL HAS SHARP EDGES. USE CARE WHEN BENDING BROKEN EDGES BACK TO PREVENT PERSONAL INJURY.

1. Bend broken edges of punctured skin inward into puncture hole. Do not attempt to remove fragments of skin by bending or pulling outward. Bend skin inward only enough to put broken edges below surface of unbroken skin.
2. Remove any loose fragments of foam which are not now held in place by bent broken skin. Removing small pieces of foam or dust is more important than removing chunks.
3. Using cloth slightly dampened with water, wipe area around puncture to remove any dirt or mud. Then wipe dry.

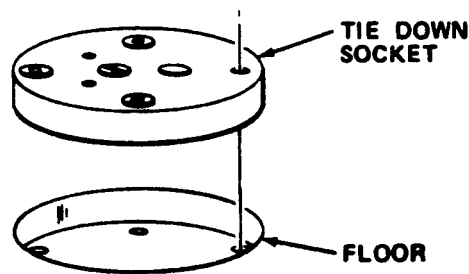
4. Inject sealant into puncture. Mound sealant to about 1/8 in. (3.2 mm) above surface of unbroken skin. Apply bead of sealant about 1/4 in. (6.4 mm) wide over all cuts in skin leading out from puncture. Do not smooth out sealant.
5. Plan how puncture is to be covered with tape before applying any tape. Length and width of tape, number of tape strips, overlapping, and how tape is applied will affect sealing capability of repair. Each piece of tape should extend about 1-1/2 in. (38.1 mm) beyond sealant it will cover. If this will require more than one strip of tape, tape should overlap about 1/2 in. (12.7 mm). If three or more strips of tape are required, center strip should be applied first.
6. Holding tape taut, apply it perpendicular to panel skin. Do not apply with rolling motion either end-to-end or center-to-ends. Do not rub each strip in place individually. Apply all strips lightly with proper overlap. Then rub into place.
7. **If** necessary, damaged tape can be replaced; however, it should be removed with careful peeling motion to avoid damage to sealant. **If** sealant also peels back, new sealant should be applied. Complete removal of old sealant is not necessary. Permanent repair by Direct Support, or higher category of maintenance, should be made as soon as possible.

1. 4. 5. 12 REPLACE TIEDOWN SOCKET.

TOOLS: Cross-Tipped Screwdriver  
 Flat-Tipped Screwdriver

SCREW

SUPPLIES: Tiedown Socket

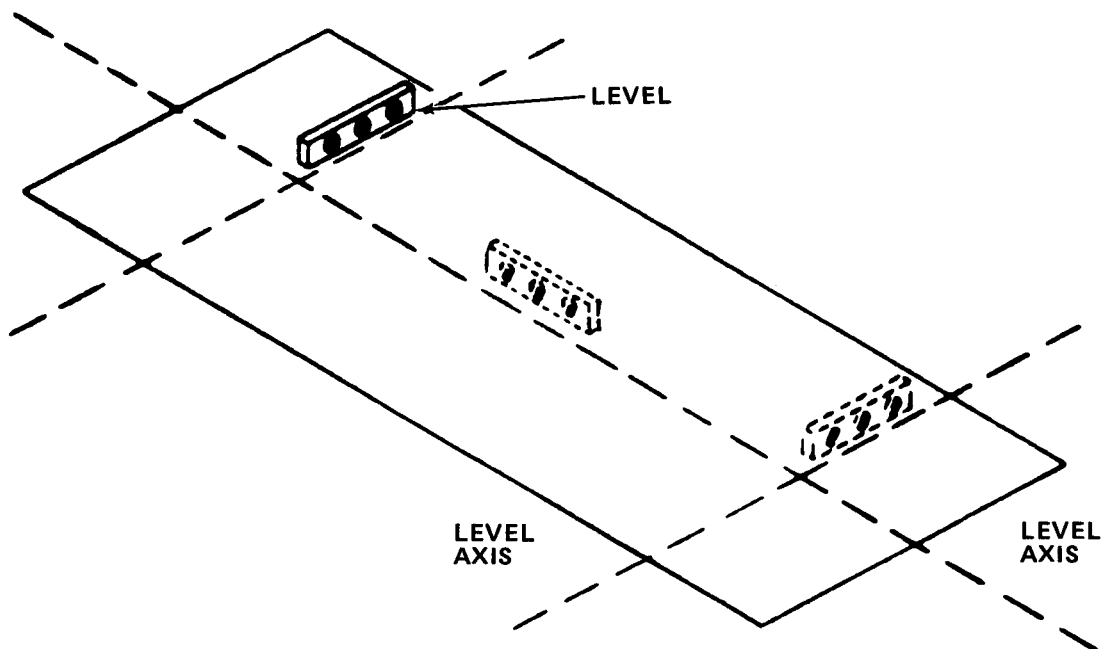


1. Remove screws from tiedown socket.
2. Pry socket from floor.
3. Install new tiedown socket. Rotate new tiedown socket enough to avoid installing screws in old screw holes.
4. Reinstall screws.

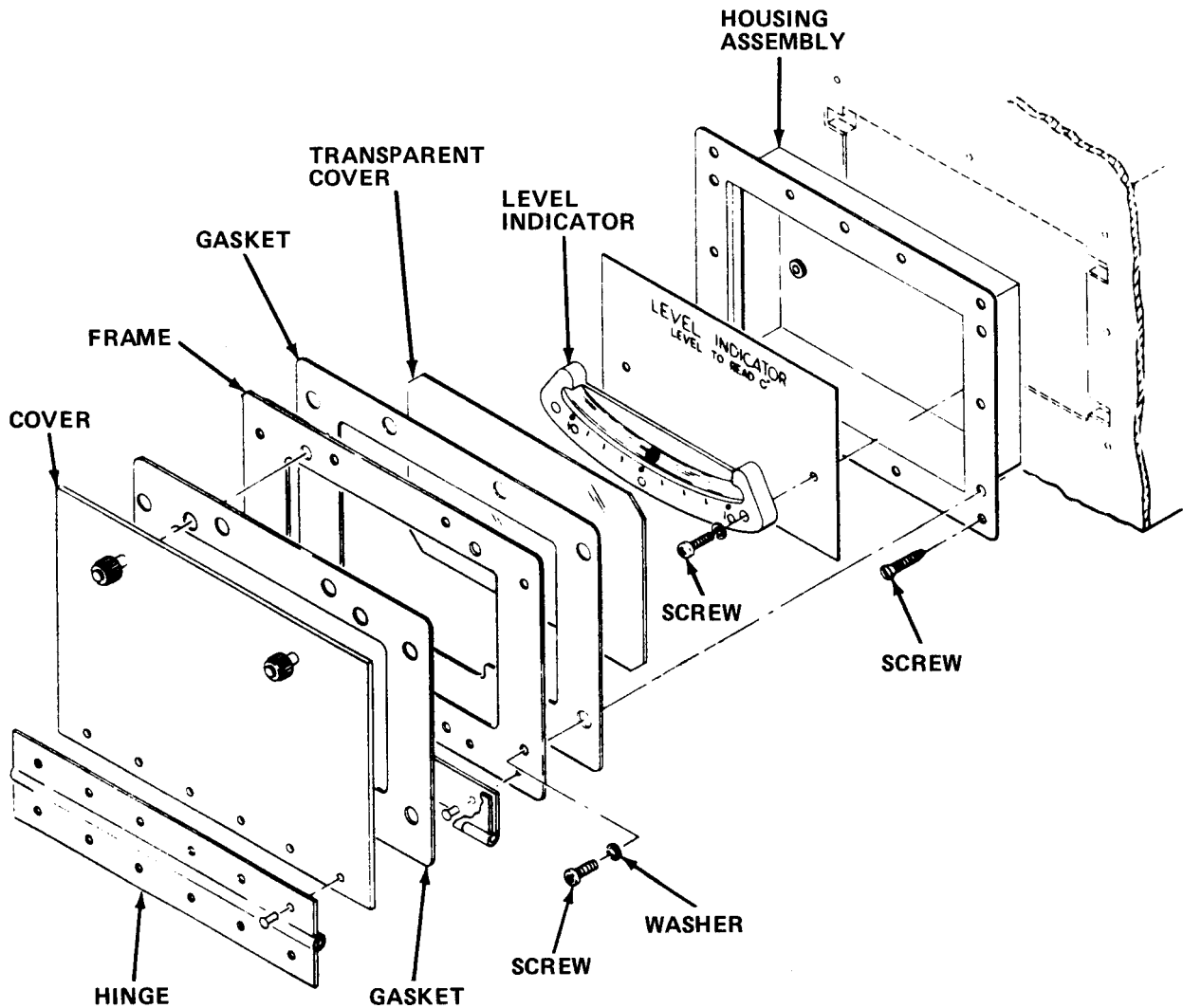
**1.4.5.13** REPLACE LEVEL INDICATOR.

TOOLS: Tool Kit  
Carpenter's Level

SUPPLIES: Level Indicator



1. Level section using level indicators. Then confirm section is level by using carpenter's level on floor inside van body.
2. Adjust section leveling jacks until section is level as shown by carpenter's level at front-rear and left-right at each end.

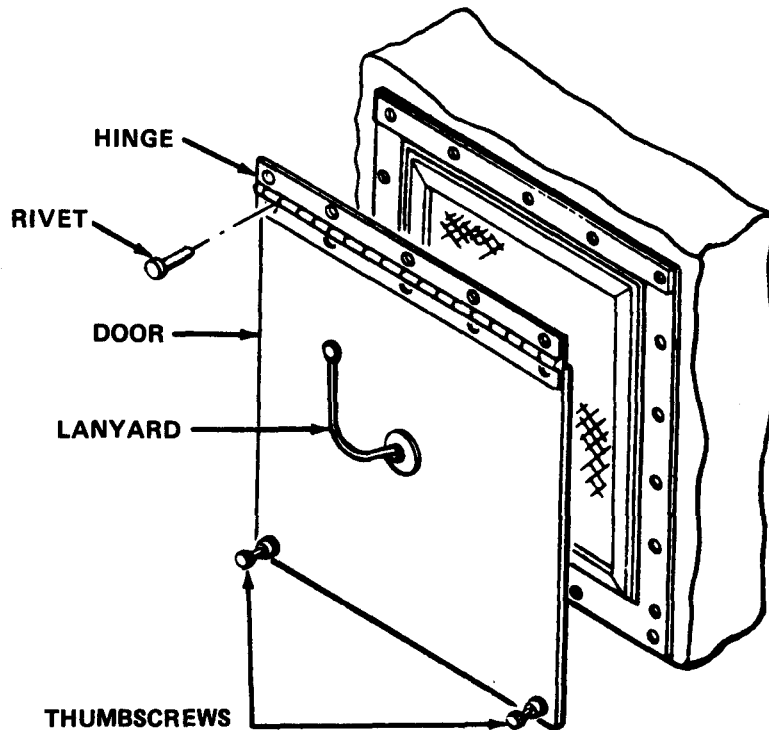


3. Remove screws and washers to release frame and gasket.
4. Remove transparent cover.
5. Remove screws and washers to remove level indicator.
6. Replace level indicator and loosely secure with screws and washers.
7. Move indicator ends up or down to align level indicator. Then tighten indicator screws.
8. Reinstall transparent cover, gasket, and frame.
9. Secure with screws and washers.

1.4.5.14 REPLACE AIR VENT DOOR.

TOOLS: Tool Kit  
Drill and Bits  
Rivet Gun

SUPPLIES: Vent Door  
Rivets  
Paint  
Paint Brush



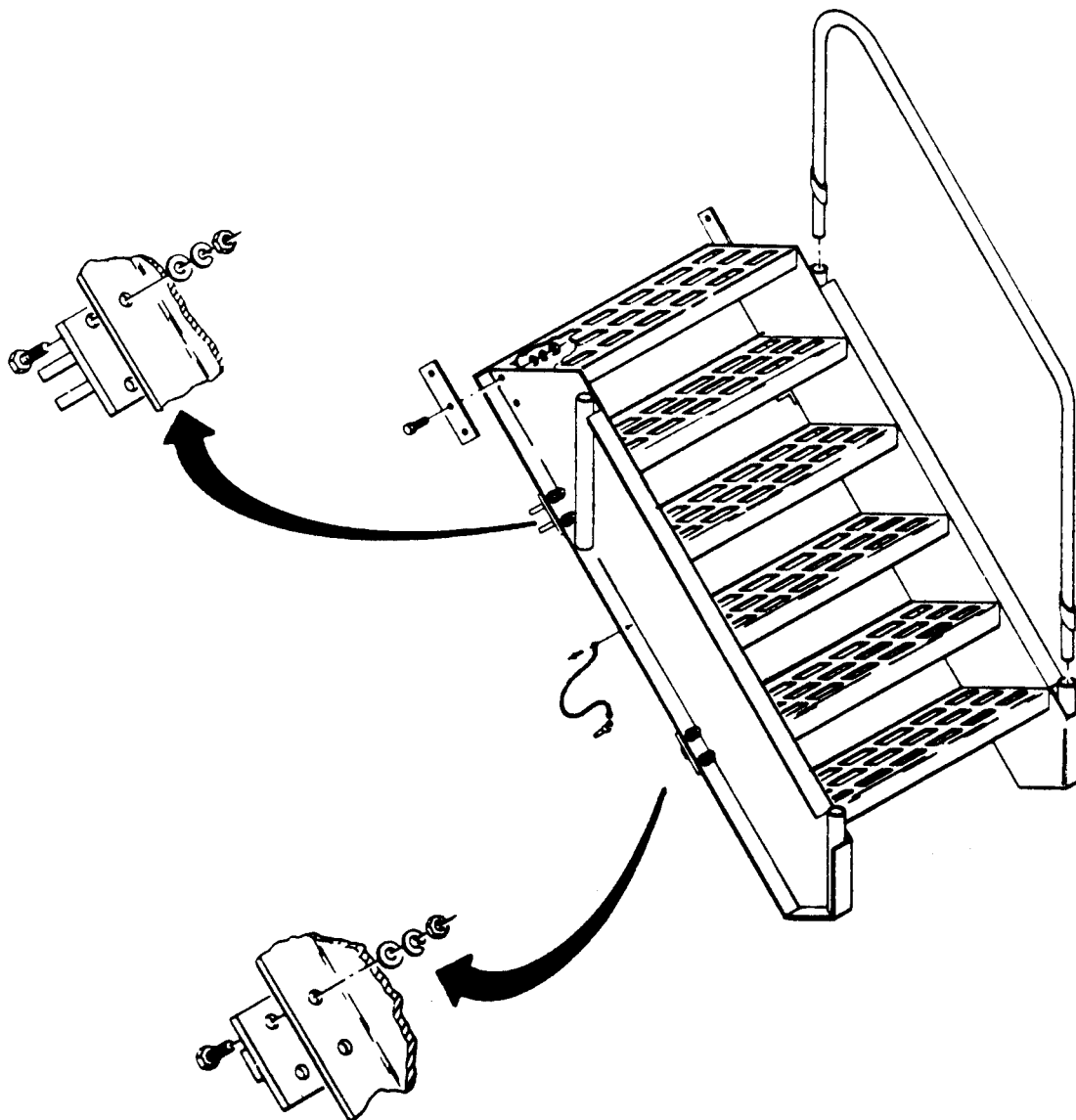
1. Loosen thumbscrews.
2. Drill rivets from hinge. Remove door.
3. Align holes and rivet new door to van body.
4. Tighten thumbscrews.
5. Paint if required in accordance with TM 43-0139, Painting Instructions for Field Use.



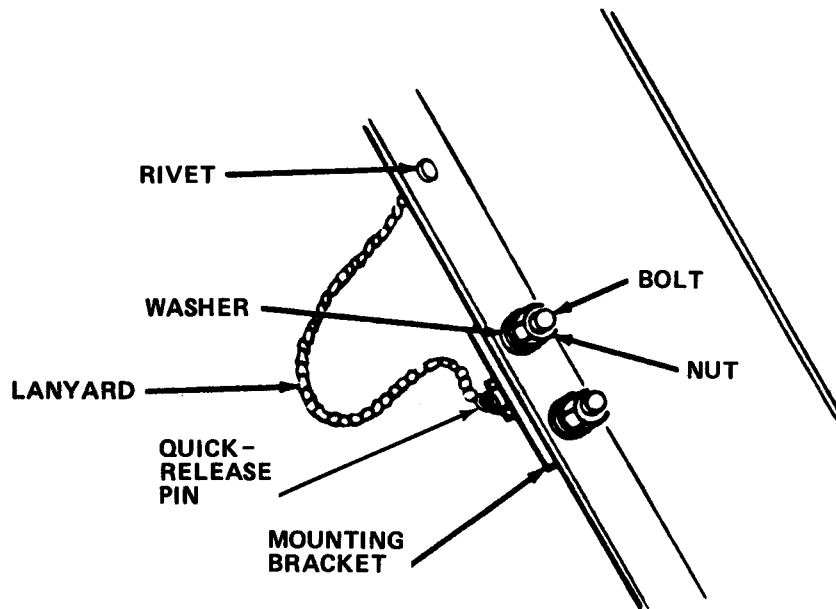
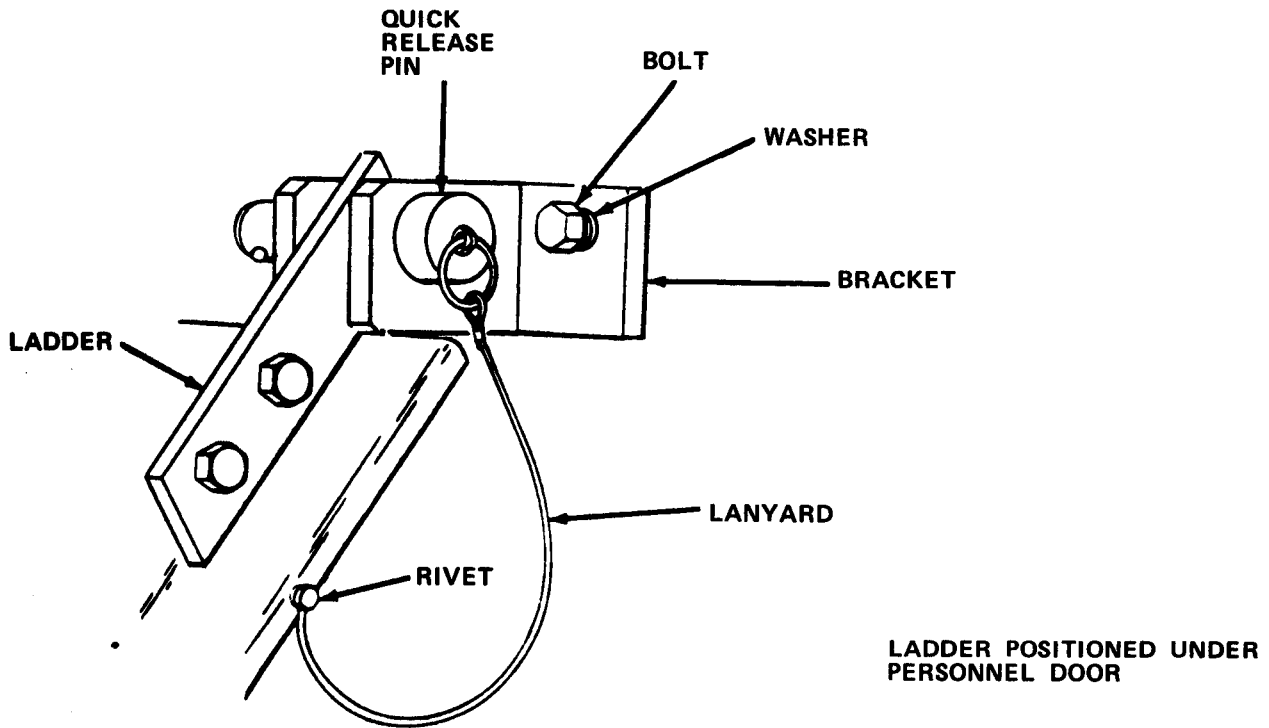
1.4.5.15 REPAIR BOARDING LADDER.

TOOLS : Tool Kit  
Rivet Gun

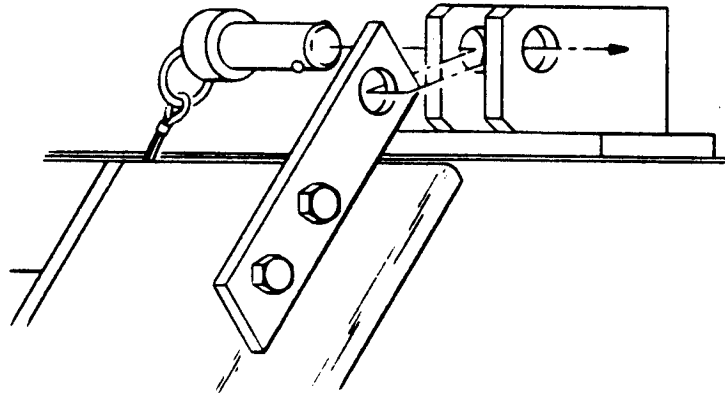
SUPPLIES: Lanyard  
Quick-Release Pins  
Rivets  
Mounting Brackets



1. Remove ladder from mounting bracket.



2. Remove bolts, washers, and nuts securing mounting brackets to ladder.
3. Remove lanyard from ladder by drilling rivet fastener out.



4. Reinstall or install new mounting brackets. Secure with bolts, washers, and nuts.
5. Rivet new lanyard with quick-release pin to ladder.
6. Be sure ladder mounting brackets fit van body on rear and side personnel doors.

#### 1.4.6 PREPARATION FOR STORAGE OR SHIPMENT

- a. Van body may be stored or shipped either mounted on trailer chassis or unmounted. Preparation of trailer chassis is covered in TM 5-2330-305-14 and should be referred to when trailer-mounted Section is prepared for storage or shipment. TM 5-4120-367-14 must be reviewed for instructions covering air conditioners/heaters.
- b. Inventory equipment and consumable supplies against Hand Receipt Manual to be sure all accountable material is contained in van body. Remove consumable supplies that have limited shelf life or broken seals. Drain and dry water system. Replace missing items and be sure that all remaining consumable supplies are at authorized levels. Be sure all major components are operational.
- c. Remove all unauthorized or personal equipment from van body.
- d. Remove all classified material or sensitive data to proper storage. Complete all accountability and/or transfer of documents.
- e. Refer to Preparation for Movement (1.2.3.2) and follow applicable steps and any additional steps directed by area authorities.

**1.4.7 REPLACEMENT OF MAJOR COMPONENTS.** All Plate Process Section major equipment remove/replace instructions are included in this paragraph.

**INDEX**

PROCEDURE	PARAGRAPH
Replace Drafting, Scribing/Tracing Table . . . . .	1.4.7.1
Replace Photolithographic Supply Storage Cabinet (1 Drawer) . . . . .	1.4.7.2
Replace Water Tank . . . . .	1.4.7.3
Replace Plate Finishing Table . . . . .	1.4.7.4
Replace Sink . . . . .	1.4.7.5
Replace Wall Storage Cabinet . . . . .	1.4.7.6
Replace Lithographic Plate Rack . . . . .	1.4.7.7
Replace Corkboard. . . . .	1.4.7.8
Replace Photolithographic Supply Storage Cabinet (10 Drawer) . . . . .	1.4.7.9
Replace Flip/Top Platemaker . . . . .	1.4.7.10
Replace Glass Holder . . . . .	1.4.7.11

1.4.7.1 REPLACE DRAFTING, SCRIBING/TRACING TABLE

TOOLS: Tool Kit

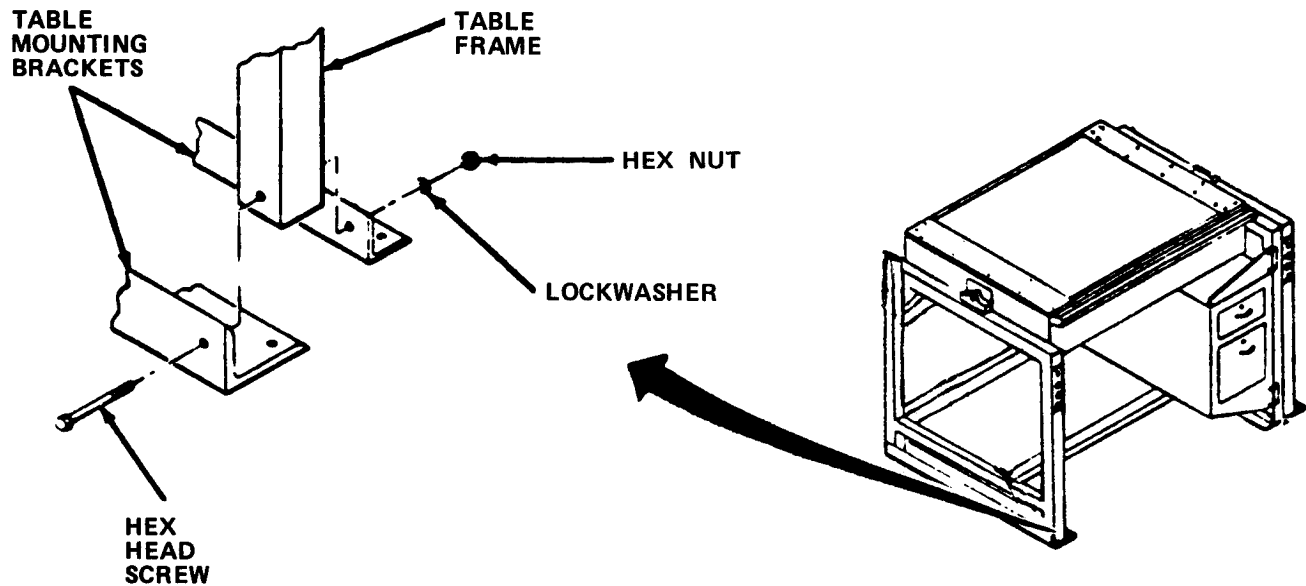
SUPPLIES: Drafting, Scribing/Tracing Table

1. Turn power switch off.

WARNING

DEATH OR SERIOUS INJURY FROM ELECTRICAL SHOCK COULD RESULT **IF** POWER CORD IS NOT REMOVED FROM RECEPTACLE BEFORE REMOVING TABLE.

2. Unplug power cord.



3. Remove hex-head screws, lockwashers, and hex nuts from table mounting brackets.

**WARNING**

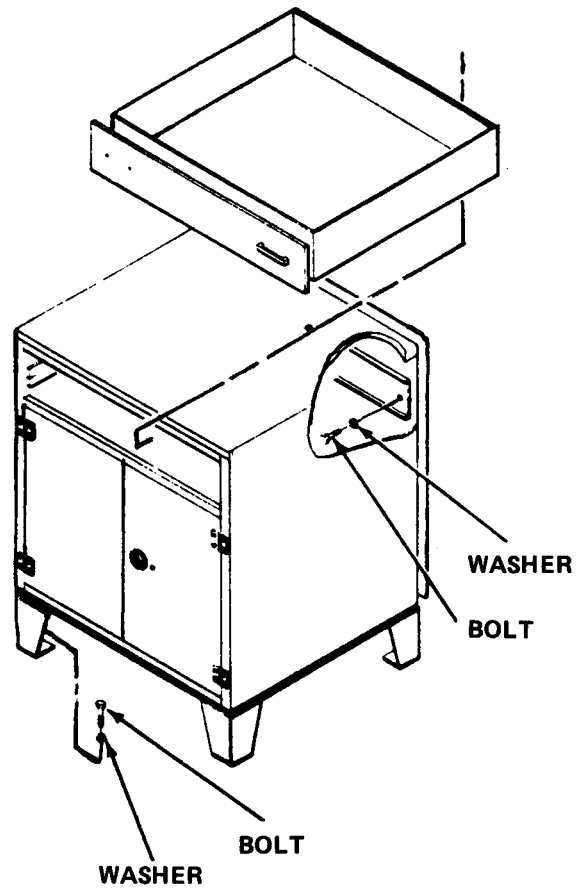
USE TWO PERSONS TO REPLACE DRAFTING, SCRIBING/  
TRACING TABLE TO PREVENT PERSONAL INJURY.

4. Carefully pull table toward you until it clears table mounting brackets.
5. Remove defective table from section.
6. Position new drafting, scribing/tracing table in front of table mounting brackets.
7. Slide table between table mounting brackets until holes in table frame are aligned with table mounting bracket holes.
8. Reinstall hex-head screws, lockwashers, and hex nuts into table mounting brackets.
9. Plug in power cord.
10. Check for proper operation.

1.4.7.2 REPLACE PHOTOLITHOGRAPHIC SUPPLY STORAGE CABINET (1 DRAWER).

TOOLS: Tool Kit

SUPPLIES: Photolithographic Cabinet



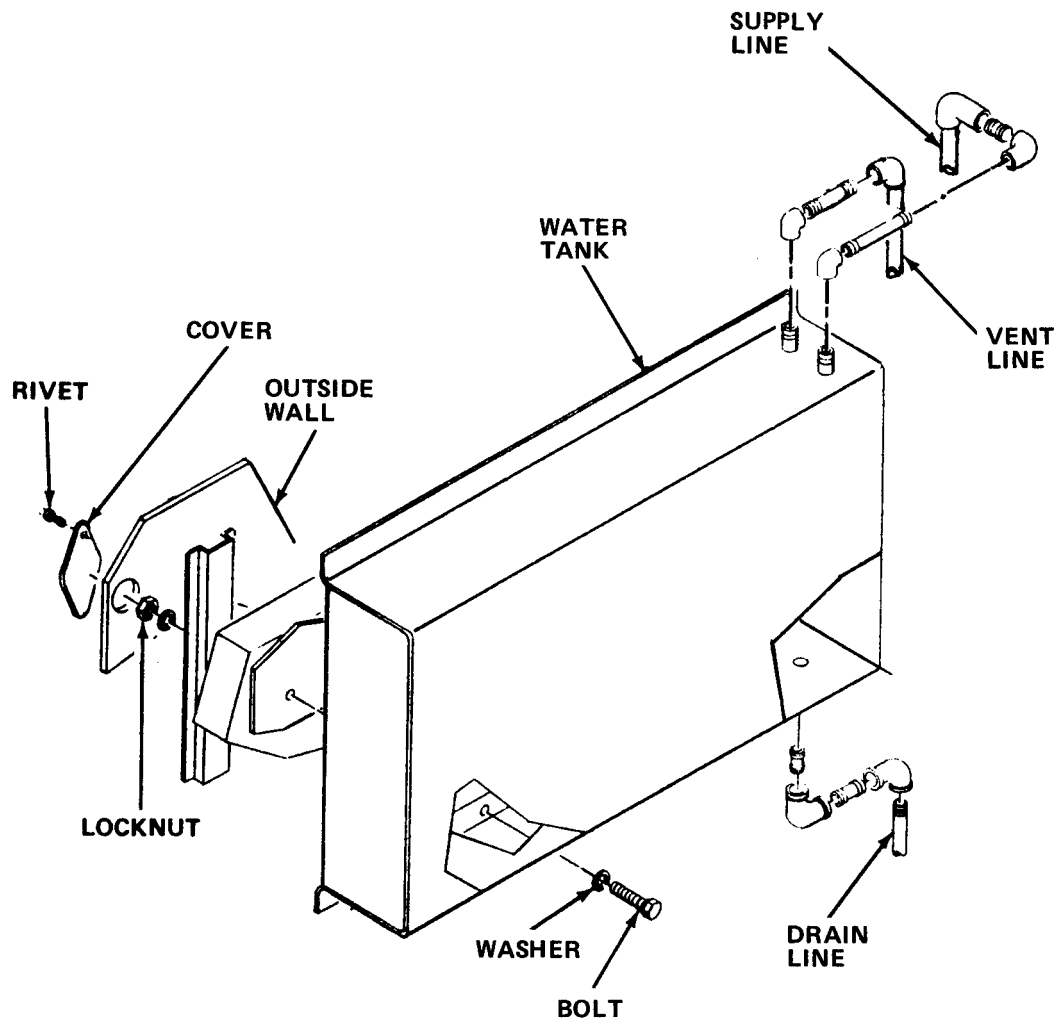
1. Open door and remove drawer.
2. Remove bolts and washers holding cabinet to wall.
3. Remove bolts and washers holding cabinet to floor.
4. Remove cabinet.
5. Remove drawer of new cabinet.
6. Line up cabinet legs over holes in floor and install bolts and washers.
7. Install bolts and washers holding cabinet to wall.
8. Install drawer and close door.

1.4.7.3 REPLACE WATER TANK.

TOOLS: Tool Kit  
Rivet Gun

SUPPLIES: Water Tank  
Rags  
Paint  
Pipe Compound  
Rivets  
RTV Compound

1. Drain water system.



2. Disconnect supply line from tank.

3. Disconnect vent line from tank.
4. Disconnect drain line from tank.
5. Drill rivets from covers on outside of section.
6. Remove covers.

**WARNING**

WEIGHT AND LOCATION OF WATER TANK REQUIRES TWO PERSONNEL TO REMOVE TANK TO AVOID PERSONAL INJURY OR DAMAGE TO EQUIPMENT.

7. Remove bolts, locknuts, and washers and replace tank.
8. Align tank with holes, replace bolts, washers and secure with locknuts.

**NOTE**

Use pipe compound on assembly of piping to be sure that there are no leaks.

9. Reconnect supply line, vent line and drain line to tank.
10. Fill tank. Check for leaks.
11. Coat inside of covers with RTV compound. Reinstall covers over bolts on outside of section.
12. Rivet covers.
13. Paint outside covers as required.



1. 4. 7. 4 REPLACE PLATE FINISHING TABLE.

TOOLS : Tool Kit

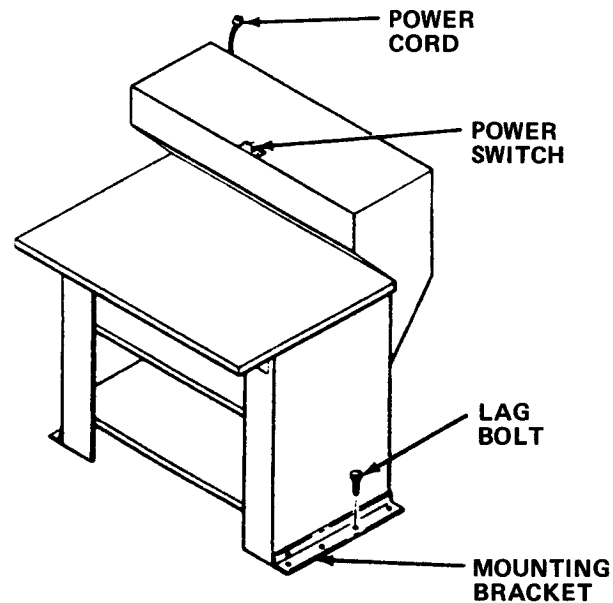
SUPPLIES: Plate Finishing Table  
Wire Ties

1. Remove Drafting, Scribing/Tracing Table (para 1. 4. 7. 1).
2. Use these procedures to remove Plate Finishing Table that may interfere with removal of this table.
3. Remove Sink if necessary (para 1. 4. 7. 5).
4. Remove Photolithographic Supply Storage Cabinet (5 Drawer) if necessary (para 1. 4. 7. 9).
5. Turn off power switch.

WARNING

DEATH OR SERIOUS INJURY FROM ELECTRICAL SHOCK COULD RESULT IF POWER CORD IS NOT REMOVED FROM RECEPTACLE BEFORE REMOVING TABLE.

6. Unplug power cord.
7. Remove wire ties.



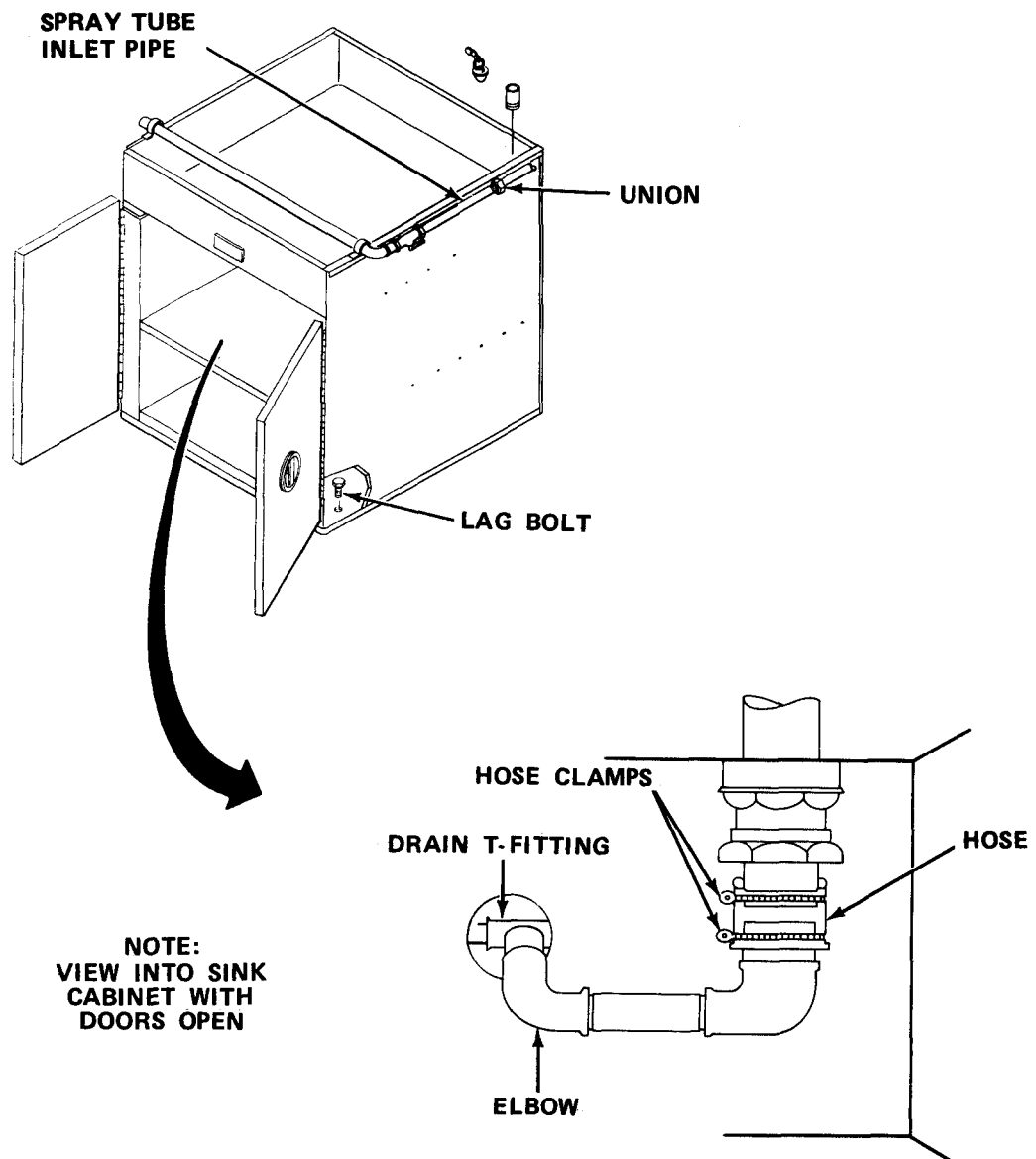
8. Remove lag bolts from mounting bracket.
9. Remove table.
10. Position new table and secure with lag bolts.
- 11.** Plug in power cord.
12. Reinstall wire ties.
13. Check for proper operation.
- 140 Reinstall Photolithographic Supply Storage Cabinet (5 Drawer) if necessary (para 1.4.7.9).
15. Reinstall Sink if necessary (para 1.4.7.5).
16. Reinstall Plate Finishing Table if necessary.
17. Reinstall Drafting, Scribing/Tracing Table (para 1.4.7.1).

1.4.7.5 REPLACE SINK.

TOOLS : Tool Kit

SUPPLIES: Sink

1. Remove Drafting, Scribing/Tracing Table (para 1.4.7.1).
2. Remove Plate Finishing Table (para 1.4.7.4).



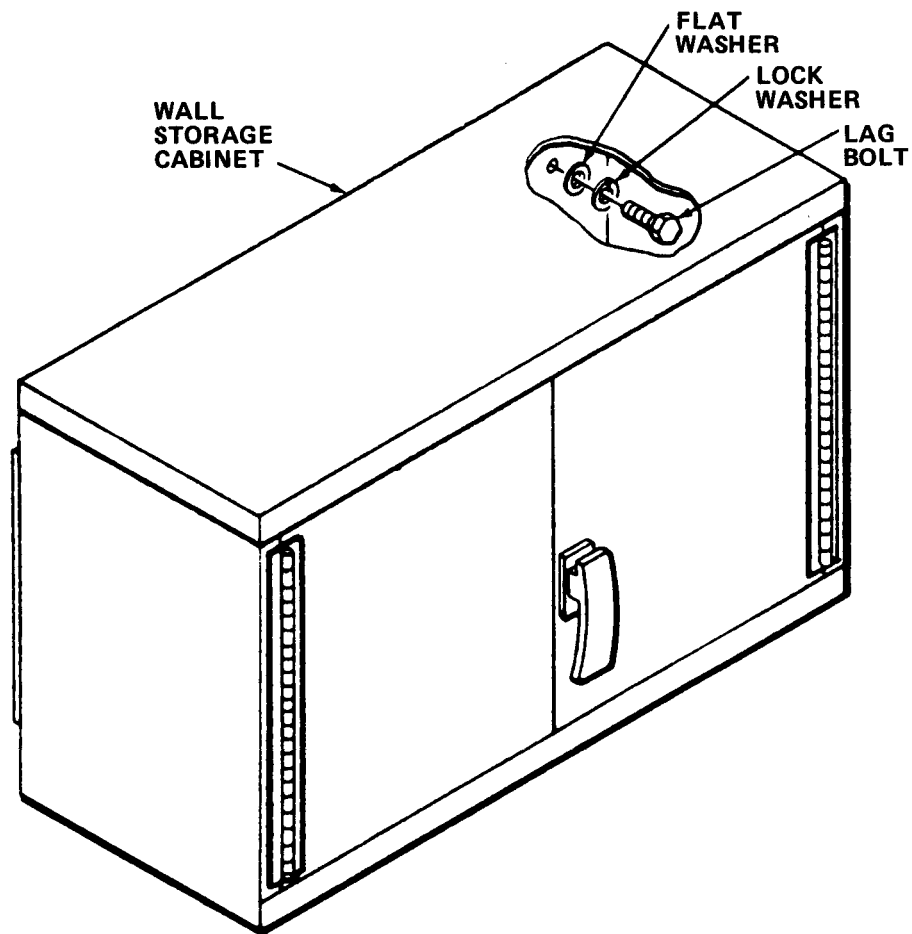
3. Disconnect union at spray tube inlet pipe.
4. Open sink cabinet doors.

5. Loosen hose clamps at both ends of drain hose and remove hose.
6. Unscrew elbow from drain T-fitting.
7. Remove lag bolts securing sink to section floor.
8. Pull sink forward to clear sink drain T-fitting and remove sink from section.
9. Position new sink and secure to floor with lag bolts.
10. Apply thread sealant to union and secure union.
11. Apply thread sealant to elbow and screw into drain T-fitting.
12. Reinstall drain hose and tighten hose clamps.
13. Apply water to sink and check for leaks. Close cabinet doors.
14. Reinstall Plate Finishing Table (para 1.4.7.4).
15. Reinstall Drafting, Scribing/Tracing Table (para 1.4.7.1).

## 1.4.7.6 REPLACE WALL STORAGE CABINET.

TOOLS: Tool Kit, Mechanic's

SUPPLIES: Wall Storage Cabinet

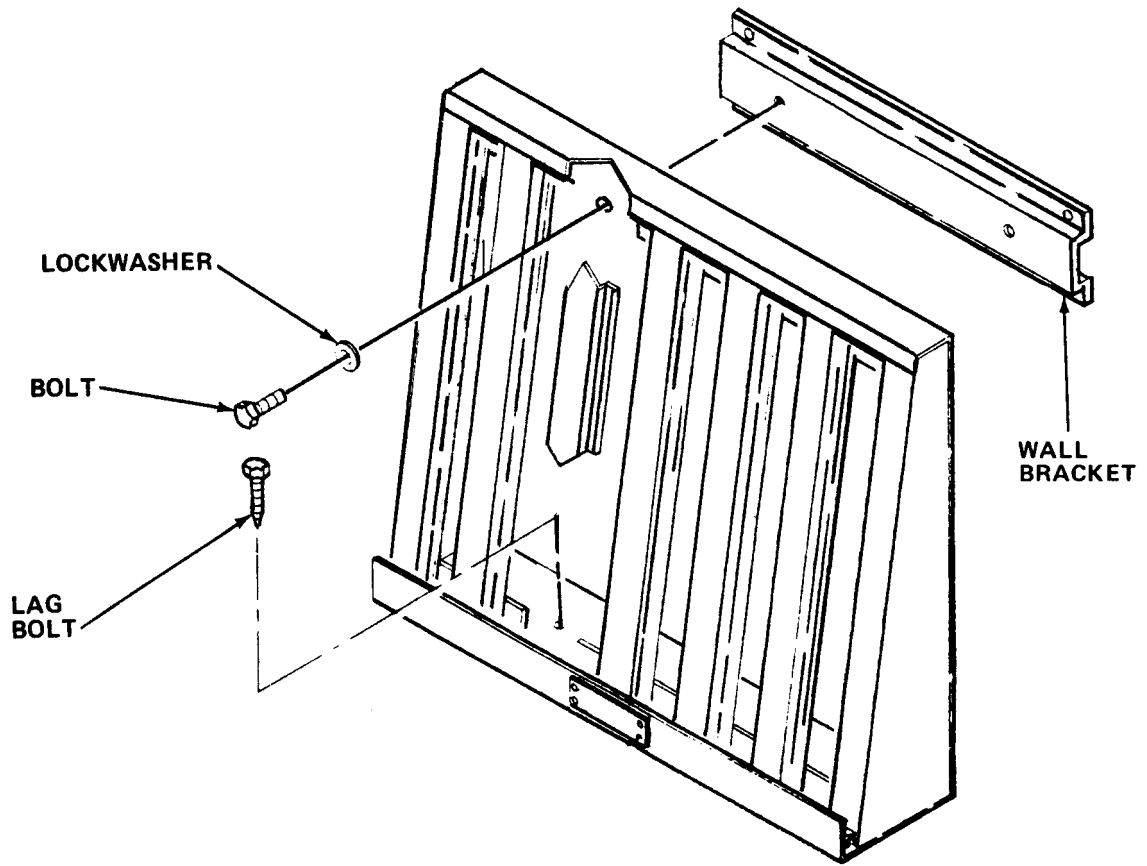


1. Remove four lag bolts, four lockwashers, and four flat washers which secure cabinet to wall.
2. Remove cabinet.
- 3\* Install new cabinet, and secure to wall with four lag bolts, lock washers, and flat washers.

1.4.7.7 REPLACE LITHOGRAPHIC PLATE RACK.

TOOLS: Tool Kit

SUPPLIES: Lithographic Plate Rack

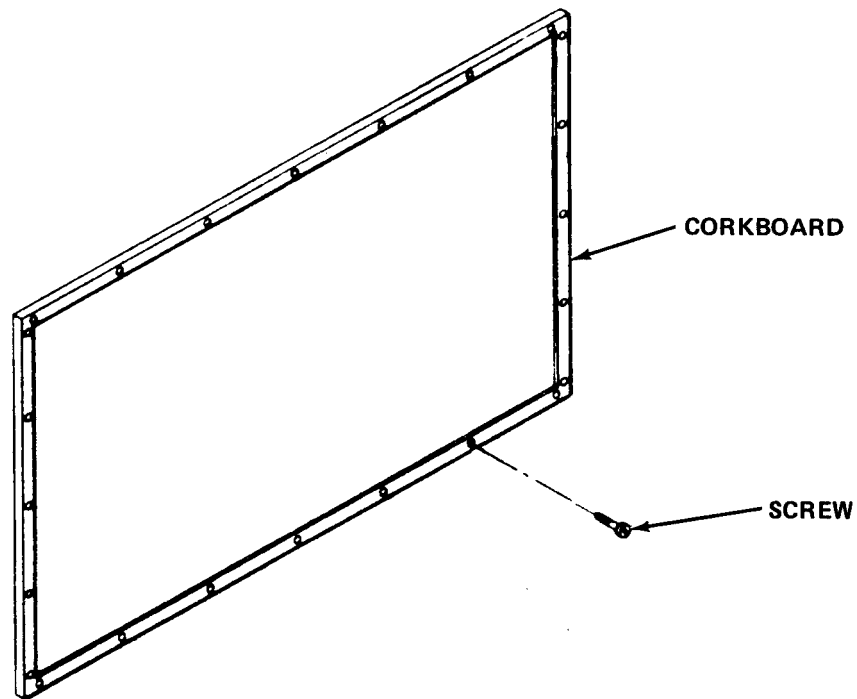


1. Remove lag bolts securing rack to floor.
2. Remove bolts and lockwashers securing rack to wall bracket.
3. Remove rack.
4. Position new rack and secure with lag bolts, bolts and lock washers.

1. 4. 7. 8 REPLACE CORKBOARD.

TOOLS : Cross-Ti pped Screwdriver

SUPPLI ES: Corkboard

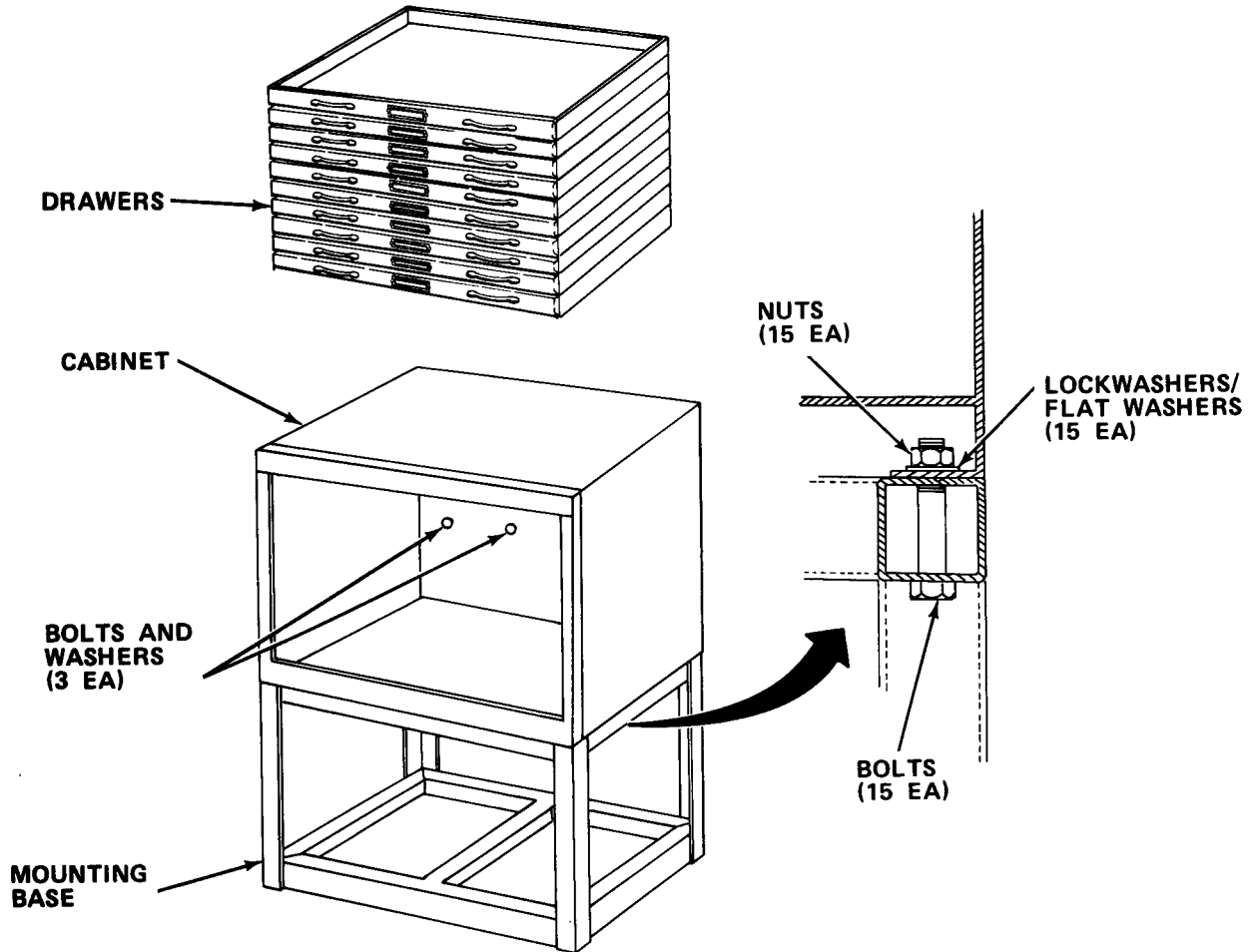


1. Remove screws.
2. Remove corkboard.
3. Position new corkboard and line up mounting holes.
4. Secure with screws.

1.4.7.9 REPLACE PHOTOLITHOGRAPHIC STORAGE CABINET (10 DRAWER).

TOOLS: Tool Kit, Mechanic's

SUPPLIES: Photolithographic Storage Cabinet



1. Remove drawers.
2. Remove bolts and washers holding cabinet to wall.
3. Remove nuts bolts and washers holding cabinet to mounting base.
4. Remove cabinet.
5. Remove drawers from new cabinet.



6. Line up cabinet over holes in mounting base and install nuts, bolts, and washers.
7. Install bolts and washers holding cabinet to wall.
8. Install drawers.

1.4.7.10 REPLACE FLIP/TOP PLATEMAKER.

TOOLS : Tool Kit, Electronic  
Hand Truck

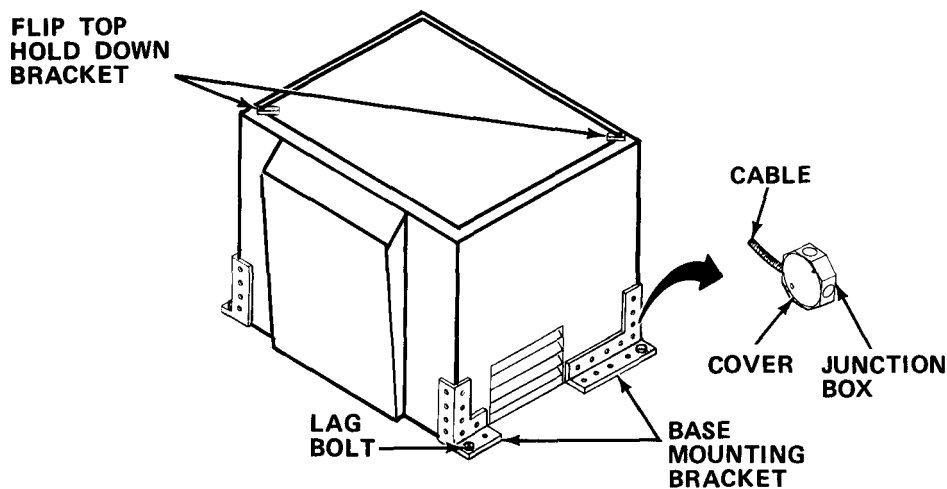
SUPPLIES: Flip/Top Platemaker  
Wire Nuts

1. Remove Drafting, Scribing/Tracing Table (para 1.4.7.1).
2. Remove Photolithographic Supply Storage Cabinet (1 Drawer) (para 1.4.7.2).
3. Remove Plate Finishing Table (para 1.4.7.4).
4. Remove Sink (para 1.4.7.5).
5. Remove Photolithographic Supply Storage Cabinet (10 Drawer) (para 1.4.7.9).
6. Remove Plate Finishing Table (para 1.4.7.4).
7. Turn off power switch.
8. Turn off appropriate circuit breaker.

WARNING

DEATH OR SERIOUS INJURY FROM ELECTRICAL SHOCK  
COULD RESULT **IF** FLIP/TOP PLATEMAKER IS NOT  
DISCONNECTED FROM POWER SOURCE BEFORE REPLAC-  
ING THE FLIP/TOP PLATEMAKER.

9. Remove cover on junction box.
10. Disconnect cable from junction box.
11. Label and disconnect wires.



12. Secure top with flip/top hold down brackets.
13. Remove lag bolts from base mounting brackets.

**WARNING**

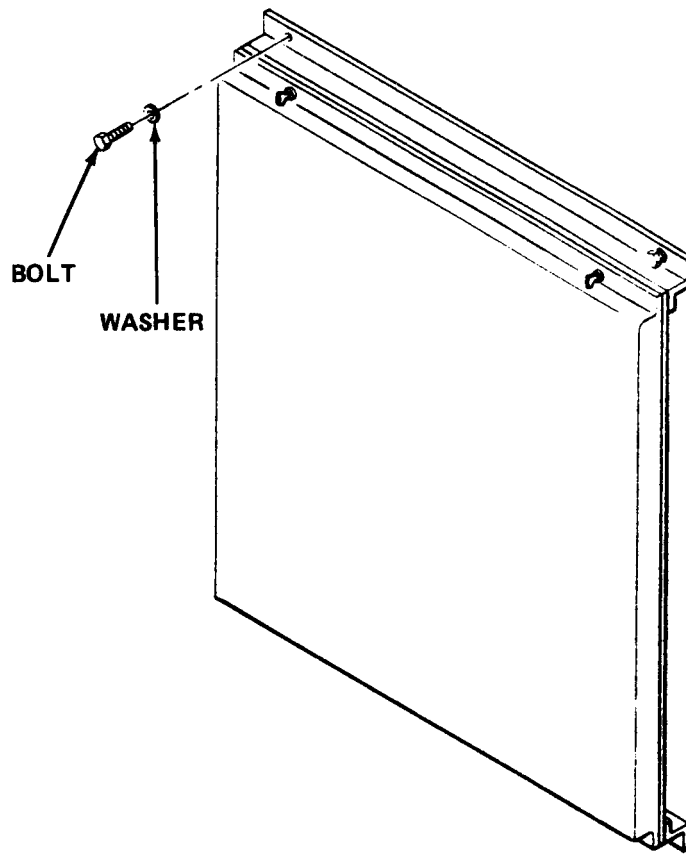
THE FLIP/TOP PLATEMAKER IS HEAVY AND REQUIRES THREE PERSONS TO MOVE **IT OR SERIOUS** PERSONAL INJURY MAY RESULT.

14. Use hand truck to remove machine from section.
15. Position new machine and secure with lag bolts.
16. Remove flip/top hold down brackets.
17. Reconnect wires and remove labels.
18. Reconnect cable to junction box.
19. Reinstall cover and secure with screws.
20. Turn on circuit breaker.
21. Turn on power switch.
22. Check for proper operation.
23. Reinstall Plate Finishing Table (para 1.4.7.4).
24. Reinstall Photolithographic Supply Storage Cabinet (5 Drawer) (para 1.4.7.9).
25. Reinstall Sink (para 1.4.7.5).
26. Reinstall Plate Finishing Table (para 1.4.7.4).
27. Reinstall Photolithographic Supply Storage Cabinet (1 Drawer) (para 1.4.7.2).
28. Reinstall Drafting, Scribing/Tracing Table (para 1.4.7.1).

1. 4. 7. 11 REPLACE GLASS HOLDER.

TOOLS: Tool Kit

SUPPLIES: Glass Holder



1. Remove glass from holder.
2. Remove bolts and washers from holder and remove holder.
3. Replace holder and secure with bolts and washers.
4. Reinstall glass in holder.

**Section V. DIRECT/GENERAL SUPPORT MAINTENANCE INSTRUCTIONS**

**1.5.1 REPAIR PARTS; SPECIAL TOOLS; TEST, MEASUREMENT, AND DIAGNOSTIC EQUIPMENT; AND SUPPORT EQUIPMENT**

1.5.1.1 COMMON TOOLS AND EQUIPMENT. For authorized common tools and equipment, refer to the Modified Table of Organization and Equipment (MTOE) applicable to your unit.

1.5.1.2 SPECIAL TOOLS; TEST, MEASUREMENT, AND DIAGNOSTIC EQUIPMENT; AND SUPPORT EQUIPMENT. No special tools; test, measurement, and diagnostic equipment; or support equipment are required for the repair of this Section at the Direct/General Support level of maintenance. Individual equipment requirements are covered in the specific equipment chapters.

1.5.1.3 REPAIR PARTS. Repair parts for this equipment are listed in TM 5-3610 259-24P, Repair Parts and Special Tools List (RPSTL), covering Organizational, Direct Support, and General Support Maintenance for this equipment.

**1.5.2 DIRECT/GENERAL SUPPORT TROUBLESHOOTING PROCEDURES**

a. Troubleshooting at Direct/General Support Maintenance level is required to maintain or restore the van body to operational readiness. Troubleshooting procedures for the air conditioner/heater are contained in TM 5-4120-367-14. Troubleshooting for the trailer chassis is contained in TM 5-2330-305-14.

b. The most common failures are covered in this section. Failures or malfunctions not covered require that systematic evaluation and step-by-step analysis of the problem be made to isolate the fault.

**Table 1-6. DIRECT/GENERAL SUPPORT TROUBLESHOOTING**

MALFUNCTION	TEST OR INSPECTION/PROBABLE CAUSE	CORRECTIVE ACTION
1. <u>PERSONNEL DOORS DO NOT CLOSE COMPLETELY.</u>		
	Step 1. Be sure that latch rollers rotate freely.	Replace latches.
	Step 2. Check to see if latch rods are bent.	Replace latch rods.

**Table 1-6. DIRECT/GENERAL SUPPORT TROUBLESHOOTING (Cont)**

---

MALFUNCTION
TEST OR INSPECTION/PROBABLE CAUSE
CORRECTIVE ACTION

---

(Cont)

Step 3. **Check** door gasket for tears or breaks causing leaks in gasket.

Replace door gasket.

CARGO DOORS DO NOT LATCH PROPERLY.

Check door latch for missing components or damage.

Replace door latch.

AIR OR WATER ENTERS VAN BODY AROUND DOOR.

Check door gasket for wear or damage.

Replace door gasket.

RECEPTACLES DO NOT OPERATE BUT CIRCUIT BREAKERS ARE ON.

WARNING

DEATH OR SERIOUS INJURY FROM ELECTRICAL SHOCK MAY RESULT FROM FAILURE TO FOLLOW ELECTRICAL SAFETY PRECAUTIONS.

Step 1. Verify line voltage and frequency at power panel.

Repair connections at entry panel.

Contact appropriate maintenance personnel to correct power source fault.

Step 2. Check power output at circuit breakers.

Tighten loose connections.

Replace circuit breaker.

**Table 1-6. DIRECT/GENERAL SUPPORT TROUBLE SHOOTING (Cont)**

MALFUNCTION	TEST OR INSPECTION/PROBABLE CAUSE	CORRECTIVE ACTION
5. <u>CIRCUIT BREAKER(S) TRIP CONTINUALLY.</u>		
	Step 1. Check receptacles for overload.	Reconnect plug-in equipment to different circuits.
	Step 2. Check circuit breakers for evidence of overheating, damage, or suspected failure.	Replace circuit breaker(s).
	Step 3. Unplug all equipment on circuit. Then plug in equipment until circuit breaker trips.	Repair grounded or defective plug-in equipment.

**1.5.3 MAINTENANCE PROCEDURES.** Direct/General Support Maintenance tasks cover the tasks authorized for Direct/General Support. When investigating damage or malfunctions, particular care must be used to be sure that the van body has not been structurally damaged to prevent safe transportation.

INDEX

PROCEDURE	PARAGRAPH
Repair Personnel /Cargo Door . . . . .	1.5.3.1
Replace Personnel /Cargo Door . . . . .	1.5.3.2
Replace Cargo Door Latch Assembly . . . . .	1.5.3.3
Replace Personnel /Cargo Door Gasket . . . . .	1.5.3.4
Replace Circuit Breaker Box Assembly . . . . .	1.5.3.5
Repair Floor Covering. . . . .	1.5.3.6
Repair Van Body Skin (Permanent) . . . . .	1.5.3.7

INDEX (Cont)

PROCEDURE	PARAGRAPH
Replace Air Conditioner/Heater . . . . .	1. 5. 3. 8
Replace Air Conditioner Support Bracket . . . . .	1. 5. 3. 9
Replace Ventilation Duct . . . . .	1. 5. 3. 10
Repair Plumbing. . . . .	1. 5. 3. 11
Repair Wire Moulding . . . . .	1. 5. 3. 12

**1.5.3.1** REPAIR PERSONNEL/CARGO DOOR .

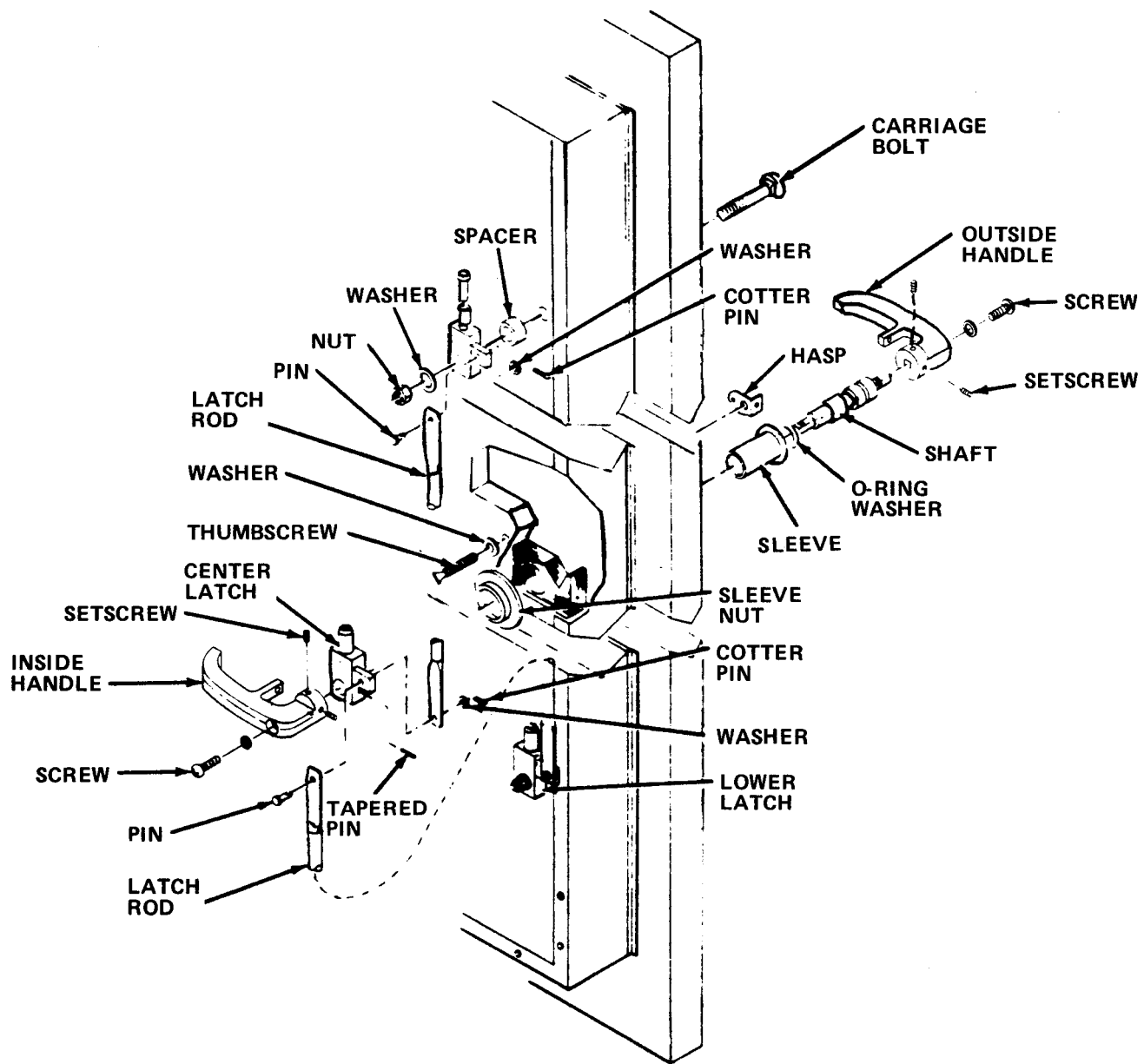
TOOLS: Tool Kit

SUPPLIES : Preformed Vinyl Gasket  
 Adhesive  
 Chalk  
 Solvent PD-680  
 Personnel Door Latch Assembly  
 Cargo Door Latch Assembly  
 Wiping Cloth  
 Motor Oil (30 wt)  
 Hand Oiler

PERSONNEL DOOR

1. Remove inside door handle.
2. Remove cotter pin and pins from center latch arm assembly.
3. Move latch rods out of way.
4. Punch pin from latch and pull latch from shaft.
5. Withdraw shaft and handle from outside.
6. Inspect all components for wear.
- 7\* Replace worn parts, the O-ring washer, and sleeve.
8. Reinstall shaft and handle from outside.
9. Align latch arm on shaft, and secure with new drift pin.
10. Align latch rod and attach to latch arms with pins, washers, and new cotter pin.
- 11.** Reinstall handle.

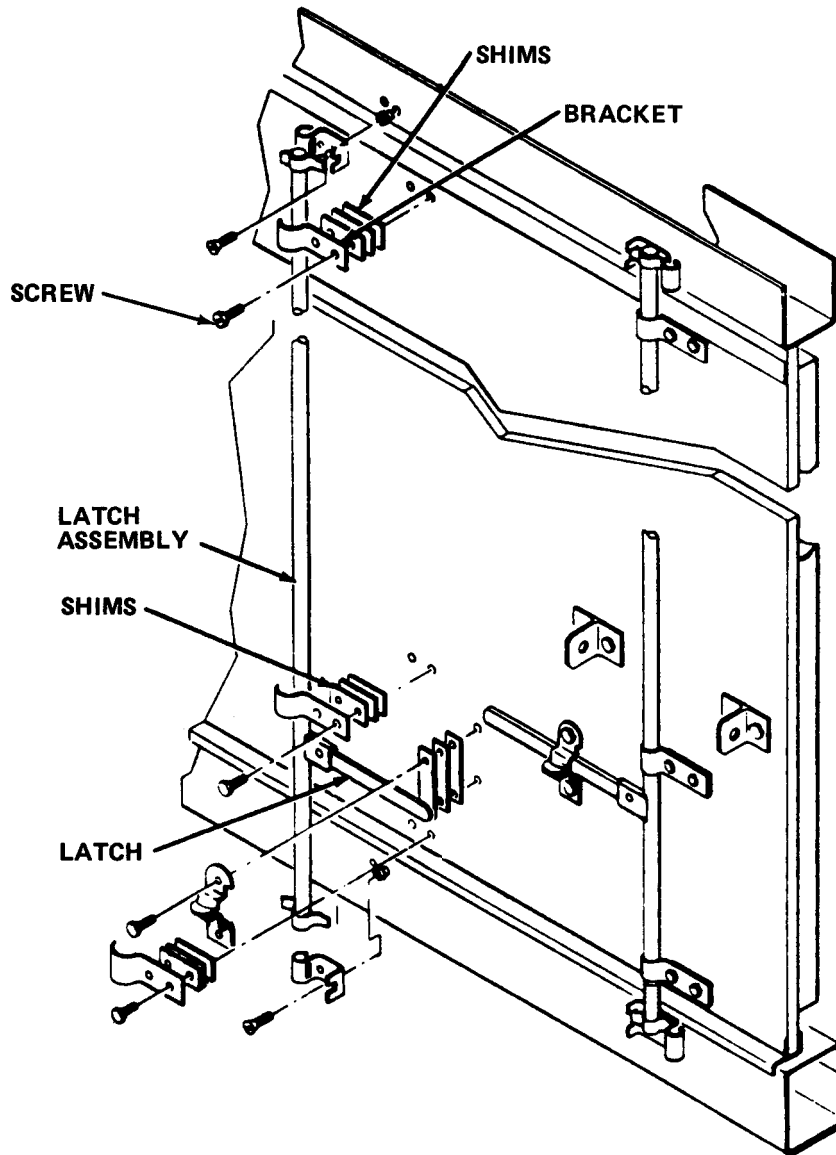




12. Lightly oil all moving parts.
13. Wipe up surplus oil.

CARGO DOOR LATCH

The cargo door latch is not repairable and must be replaced using the following procedure:



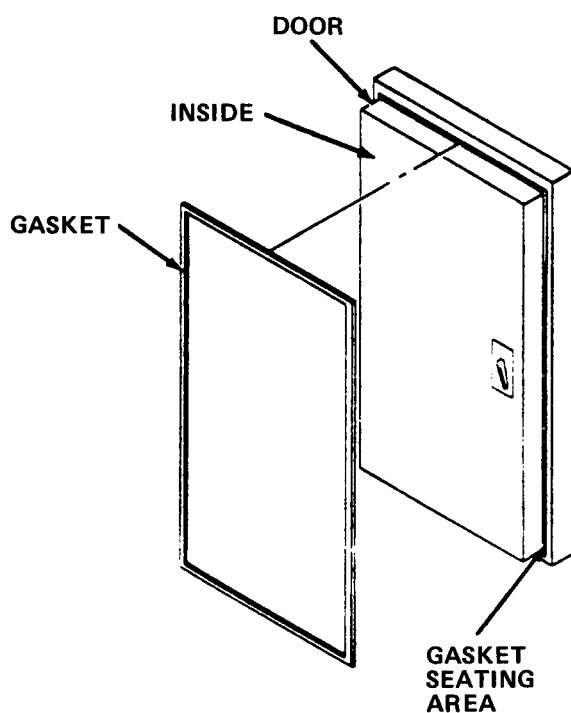
1. Unl ock l atch.
2. Remove screws from brackets. Save screws, brackets, and shims for reuse.
3. Replace l atch assembly.

- Secure new latch assembly with screws and brackets. Be sure that shims permit latch assembly to turn freely without chafing or binding.

## DOOR GASKET

## NOTE

Door gasket should be tested any time door is removed for maintenance; hinges, rollers, or other components are replaced; or if any noticeable increase in moisture, heat, cold, or dust is noticed inside van body.



- Open door to full opening and secure in open position.

## NOTE

This step may be omitted if gasket is torn or damaged.

- Chalk edge of gasket. Then secure door in closed position. Open door and inspect inside door frame to see if chalk has been transferred completely to frame without gaps or breaks.

**WARNING**

DRY CLEANING SOLVENT, P-D-680, USED TO CLEAN PARTS IS POTENTIALLY DANGEROUS TO PERSONNEL AND PROPERTY. AVOID REPEATED AND PROLONGED **SKIN** CONTACT. WEAR SOLVENT IMPERMEABLE GLOVES AND EYE/FACE PROTECTIVE EQUIPMENT WHEN **USING SOLVENT. DO NOT USE NEAR OPEN FLAME OR EXCESSIVE HEAT. FLASH POINT OF SOLVENT IS 100°F TO 138°F (38°C TO 59°C).**

3. Remove defective gasket by prying entire gasket from door. Scrape all traces of gasket and adhesive from door. Wash with solvent.
4. Coat gasket seating area on door with adhesive.
5. Firmly press new gasket onto door.
6. Wipe excess adhesive from gasket.
7. Close door and latch firmly.
8. Open door and wipe excess adhesive from frame and door.
9. Allow adhesive to cure before using door.

1. 5. 3. 2 **REPLACE PERSONNEL/CARGO DOOR.**

TOOLS: Tool Kit  
Rivet Gun  
Drill and Bits  
Hoist  
Paint Brushes

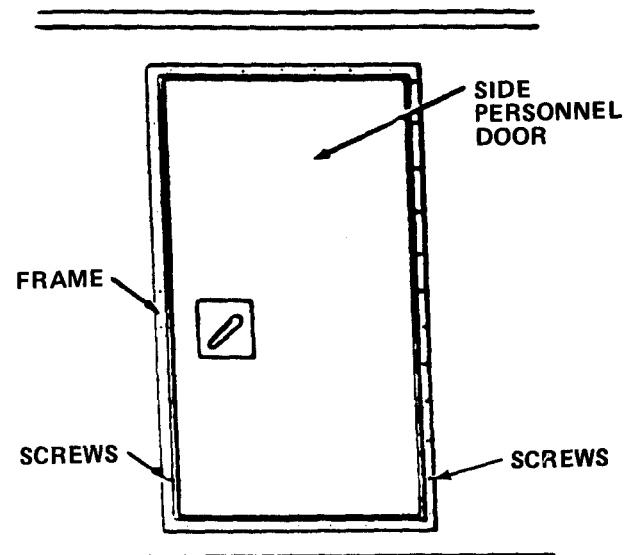
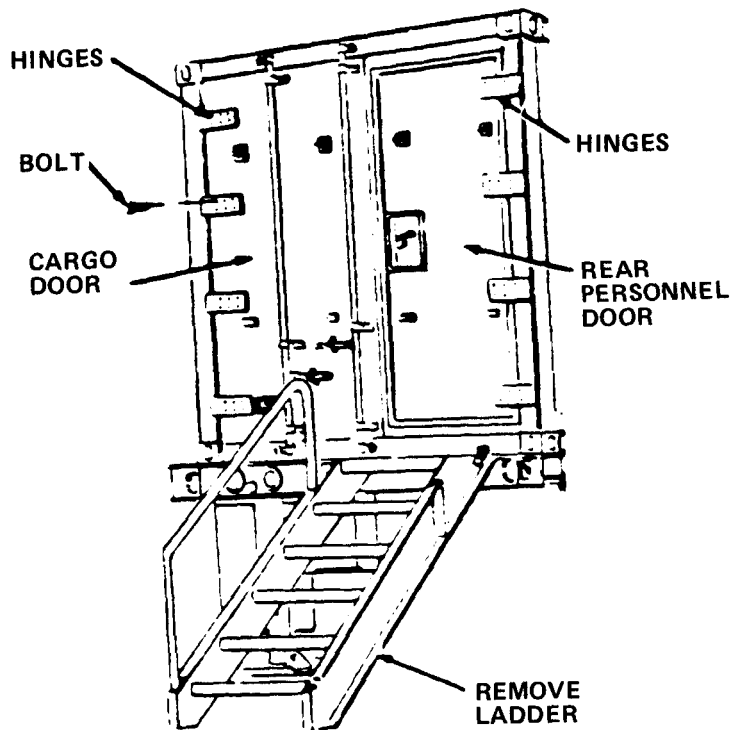
SUPPLIES: Door  
Rivets  
Gasket  
Paint  
Adhesive  
Cloth

**WARNING**

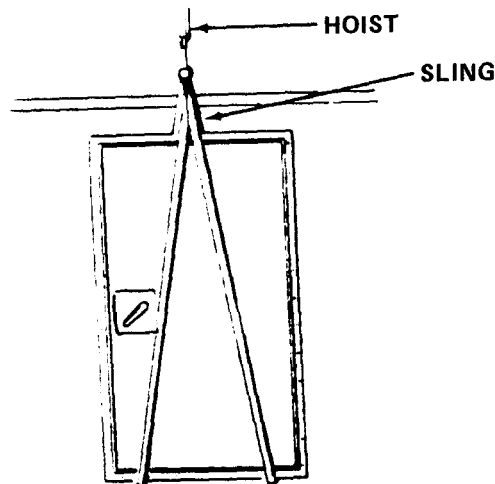
TO PREVENT PERSONAL INJURY DO NOT ATTEMPT TO REMOVE DOOR UNLESS SUITABLE LIFTING EQUIPMENT IS AVAILABLE.

**NOTE**

Procedures for replacement of large cargo door at rear and smaller personnel doors differ only in method of attaching hinges to door. Both types of doors are covered in this procedure as damage to one door type normally will cause other openings in van body to be damaged.



1. Remove handrails from mounted ladders or remove ladders from stowed position if rear doors are to be replaced.
2. Unlock and open door to be replaced.



3. Place sling around door and take a slight strain on hoist until weight is removed from hinge.
4. Remove bolts from hinges on rear personnel door or cargo door. On side personnel door, remove screws to remove hinges from doors.

**TM 5-3610-259-14**

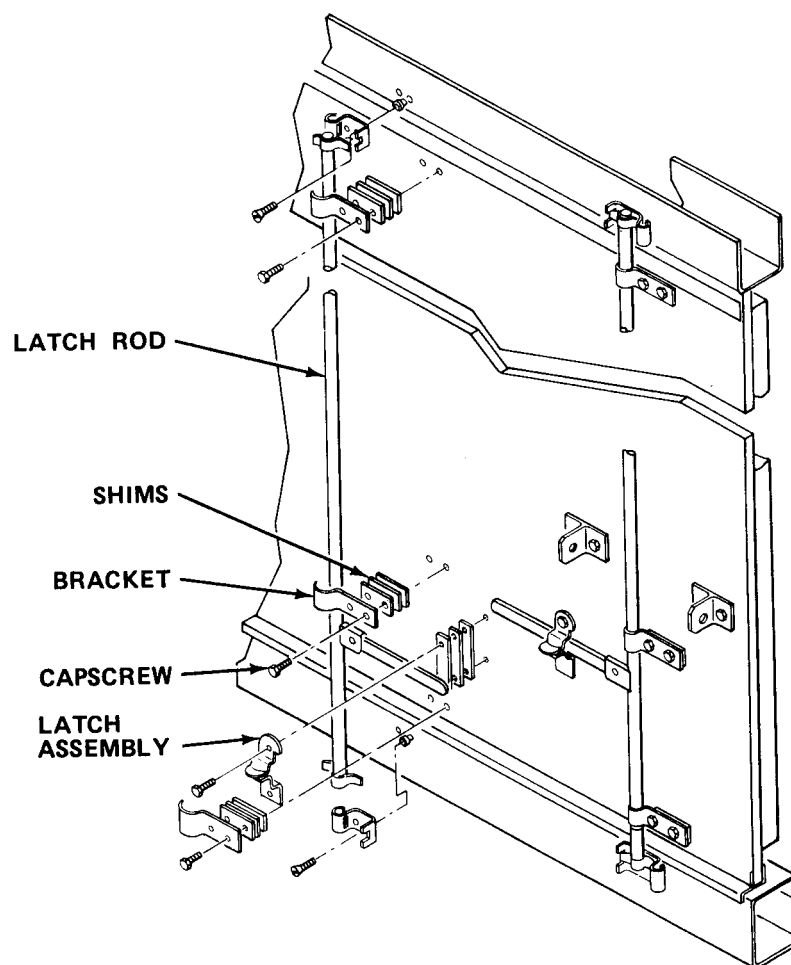
5. Remove old door. Be sure to transfer all locking and fastening hardware that is needed on new door.
6. Sling door and raise to mounted position. Then carefully align holes and reinstall bolts for rear cargo or personnel door.
7. Install new gasket after door is mounted and slings removed.  
(1.5.3.1, Door Gasket)
8. Chalk-test door. (1.5.3.1, Step 2.)
9. Repaint as required.

1.5.3.3 REPLACE CARGO DOOR LATCH ASSEMBLY.

MOS: 63W, Wheel Vehicle Repairer

TOOLS : 9/16 in. Combination Wrench

SUPPLIES: Cargo Door Latch Assembly



- a. Unlock latch.
- b. Remove capscrows and washers from brackets. Remove brackets and shims.
- c. Remove defective latch assembly and latch rod.
- d. Install new latch assembly and latch rod.
- e. Reinstall shims, brackets, washers, and capscrows.
- f. Check movement at latch rod and latch assembly. Lock latch.

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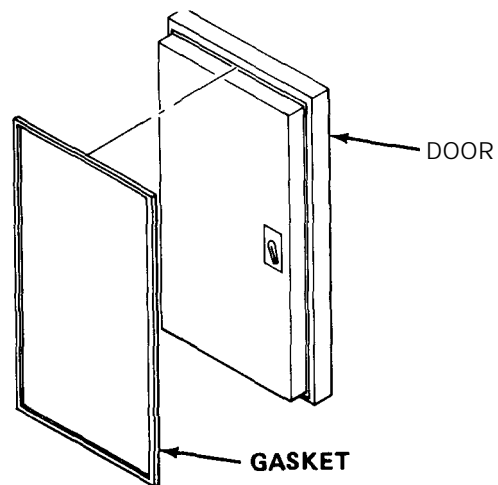


#### 1.5.3.4 REPLACE PERSONNEL/CARGO DOOR GASKET.

MOS: 63W, Wheel Vehicle Repairer

TOOLS: Knife

SUPPLIES: Vinyl Gasket  
Adhesive (Item 1, Appendix E)  
Solvent P-D-680  
Impermeable Gloves  
Goggles



- a. Open door completely and secure in open position.

#### WARNING

Dry cleaning solvent, P-D-680, used to clean parts is potentially dangerous to personnel and property. Avoid repeated and prolonged skin contact. Wear solvent impermeable gloves and eye/face protective equipment when using solvent. Do not use near open flame or excessive heat. Flash point of solvent is 100°F to 138°F (38°C to 59°C).

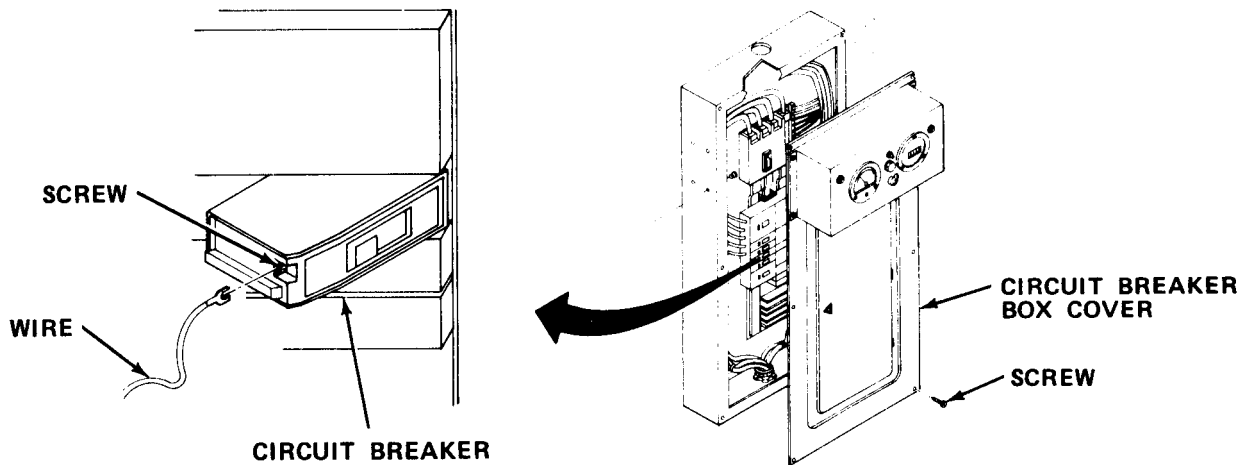
- b. Remove defective gasket by prying gasket from door. Scrape traces of gasket and adhesive from door. Wash with solvent P-D-680.
- c. Coat gasket area on door with adhesive.
- d. Firmly press new gasket onto door.
- e. Wipe excess adhesive from gasket.
- f. Close door and wipe excess adhesive from door and frame.
- g. Allow adhesive to dry before using door.

1.5.3.5 REPLACE CIRCUIT BREAKER.

MOS : 35E, Special Electronic Devices Repairer

TOOLS: Flat Tip Screwdriver  
Multimeter

SUPPLIES: Circuit Breaker



**WARNING**

Turn off and padlock safety switch and all individual circuit breakers before inspecting or servicing circuit breakers. Failure to do so may result in death or serious injury.

- a. Turn off and padlock safety switch and individual circuit breakers.
- b. Remove circuit breaker box cover.
- c. Use multimeter to make sure voltage is not present.
- d. Remove defective circuit breaker by pushing and snapping out of place.
- e. Tag and remove wires from defective circuit breaker.
- f. Pull circuit breaker from panel.

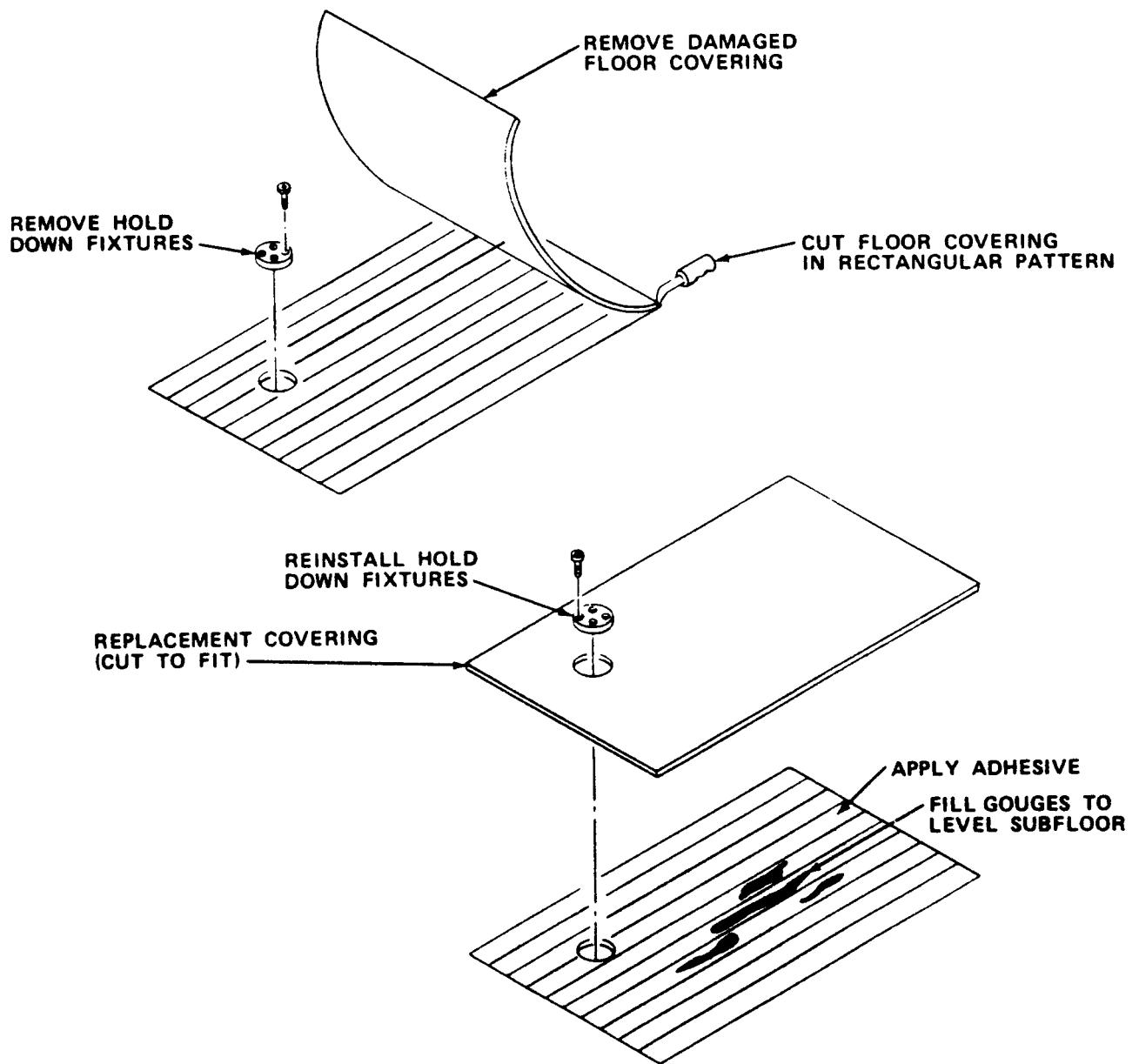
- g.** Reconnect wires to new circuit breaker. Secure wires with screws.
- h.** Install new circuit breaker by pushing and snapping into place.
- i.** Reinstall circuit breaker box cover.
- j.** Remove padlock and turn on safety switch and individual circuit breakers.



1.5.3.6 REPAIR FLOOR COVERING.

TOOLS: Utility Knife  
 Cross-Tipped Screwdriver  
 Scraper  
 Straightedge

SUPPLIES: Vinyl Floor Covering  
 Epoxy Resin  
 Floor Patch  
 Cloth  
 Waterproof Adhesive



1. Inspect damaged area to determine if structural damage to subfloor, bolsters, or frame is evident. Structural damage may weaken van body to extent that transportation is unsafe, and depot level repair is required.
2. Remove damaged floor covering by cutting a rectangular pattern around damaged area with utility knife and straightedge. Then remove any floor tiedown or hold-down fixtures.
3. Remove floor covering inside cut area with scraper.
4. **If** required, level subfloor gouges by filling gouges with epoxy resin and allow at least 8 hours for patch to cure.
5. Trim vinyl floor covering to fit patch and trim holes for all fixture hold-downs.

**NOTE**

To match color of floor covering, use vinyl floor covering surface with backing NSN 7220-00-149-0483.

6. Spread MIL-A-5092B waterproof adhesive (Type **II** or **III**) or equivalent inside patch area.
7. Place vinyl patch in hole and weight patch to hold firmly in place without edges curling.
8. Wipe up all excess adhesive that is on surface of floor.
9. Reinstall fixture hold-downs.
10. Do not wash floor for at least 24 hours to be sure adhesive has cured.

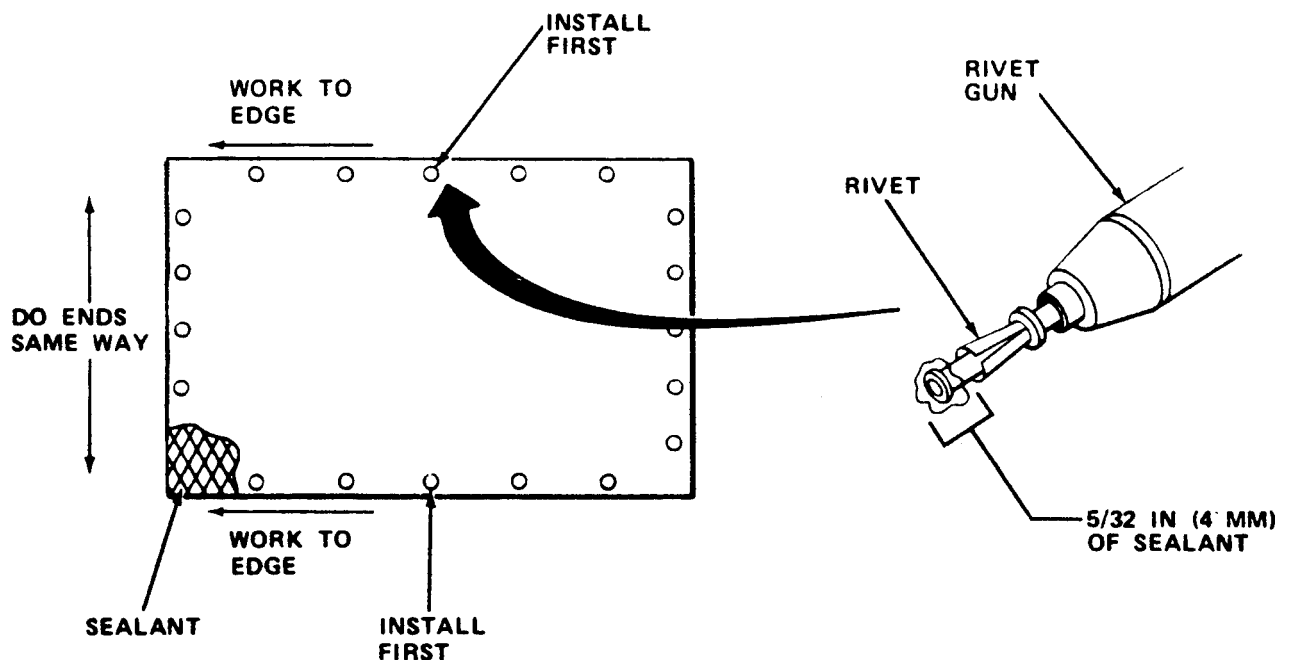


1. 5. 3. 7 REPAIR VAN BODY SKIN (PERMANENT) .

TOOLS: Rivet Gun  
Drill and Bit

SUPPLIES: Rivets  
Silicone Sealant  
Adhesive  
Sheet Metal

1. Bend broken edges of punctured skin inward into puncture hole. Do not attempt to remove fragments of skin by bending or pulling outward. Bend skin inward only enough to put broken edges below surface of unbroken skin.
2. Remove any loose fragments of foam which are not now held in place by bent broken skin. Removing small pieces of foam or dust is more important than removing chunks.
3. Using damp cloth, wipe area around puncture clean. Then wipe dry.
4. Prepare sheet metal patch sufficient in size to cover damaged area with plenty of overlap.
5. Place patch over damaged area and mark all around edges of patch. Then remove patch.
6. Clean entire area where patch will go.
7. Inject sealant into puncture. Mound sealant to about 1/8 in. (3.2 mm) above surface of unbroken skin. Apply bead of sealant about 1/4 in. (6.4 mm) wide over all cuts in skin leading out from puncture. Do not smooth out sealant.



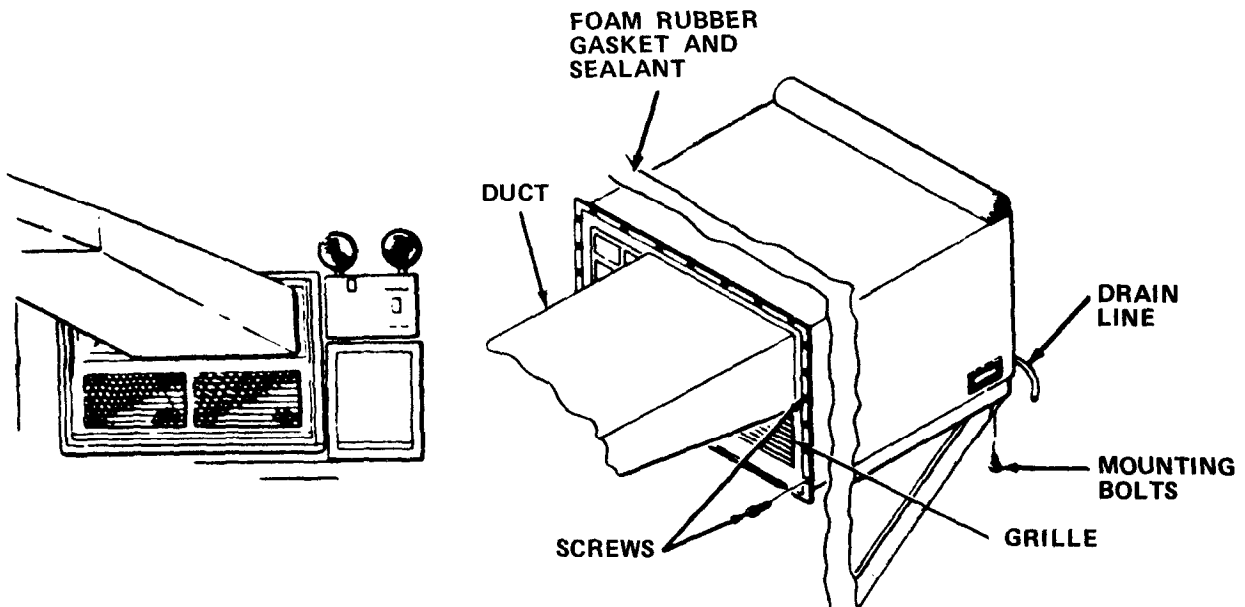
8. Apply sealant to patch, inside borders.
9. Apply patch to van body.
10. Drill holes and install rivets as shown. Use sealant on rivets. Install first rivets at center of each side. Then work toward corners. Rivets should be spaced about 1 in. (25.4 mm) apart and .38 in. (9.5 mm) from edge of patch.
- 11.** Apply liberal amount of sealant around patch and on rivet heads.
12. Paint in accordance with local directives.

1.5.3.8 REPLACE AIR CONDITIONER/HEATER.

TOOLS: Cross-Tipped Screwdriver  
 Flat-Tipped Screwdriver  
 Wrench Set  
 Lifting Equipment

SUPPLIES: Air Conditioner/heater  
 Solvent  
 Gasket Material  
 Adhesive

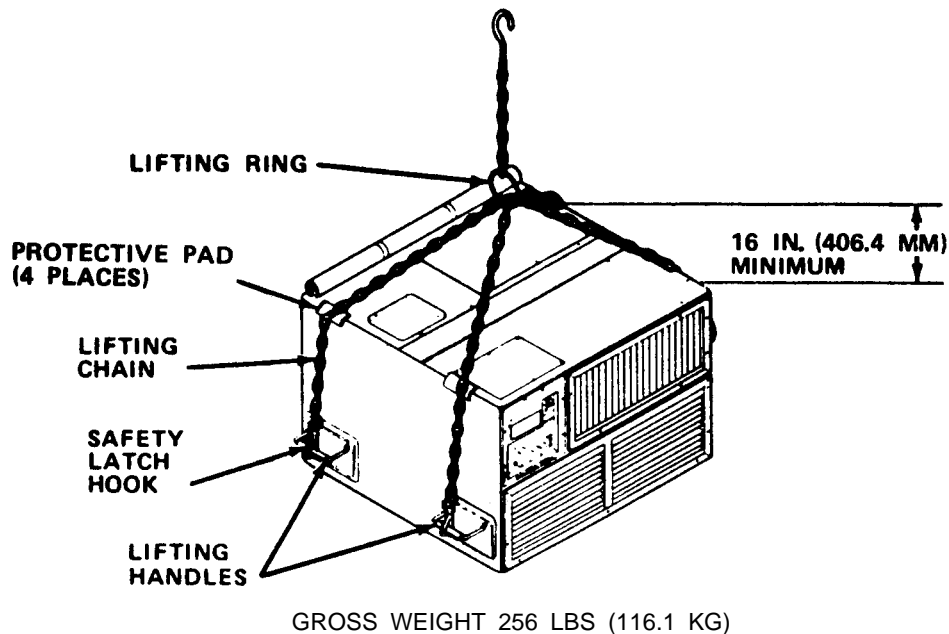
PERSONNEL: Two



WARNING

DEATH OR SERIOUS INJURY MAY RESULT FROM FAILURE TO TURN OFF POWER BEFORE SERVICING AIR CONDITIONER/HEATER.

1. Turn off circuit breakers to air conditioners/heaters.
2. Unplug power cord.
3. Unscrew duct from grille.
4. Unscrew molding from interior and exterior of van body. Remove sealant and foam rubber gasket.
5. Disconnect drain lines from air conditioner/heater.



6. Attach sling to lifting handles, and raise hoist enough to remove slack from sling.
7. Remove six mounting bolts.
8. Slide out air conditioner/heater until other lifting handles are free. Then attach sling to handles.
9. Guide air conditioner/heater unit from van body while raising hoist.
10. Lower air conditioner/heater on flat-bed lift truck or pallet.

#### WARNING

DRY CLEANING SOLVENT, P-D-680, USED TO CLEAN PARTS IS POTENTIALLY DANGEROUS TO PERSONNEL AND PROPERTY. AVOID REPEATED AND PROLONGED SKIN CONTACT. WEAR SOLVENT IMPERMEABLE GLOVES AND EYE/FACE PROTECTIVE EQUIPMENT WHEN USING SOLVENT. DO NOT USE NEAR OPEN FLAME OR EXCESSIVE HEAT. FLASH POINT OF SOLVENT IS 100°F TO 138°F (38°C TO 59°C).

11. Clean sealant from opening and replace if gasket is deteriorated.

CAUTION

HOLE IN VAN BODY MUST BE COVERED TO PREVENT DIRT, DUST, OR MOISTURE FROM ENTERING VAN BODY OR DOUBLE WALL OF BODY, UNLESS REPLACEMENT IS TO BE IMMEDIATELY INSTALLED.

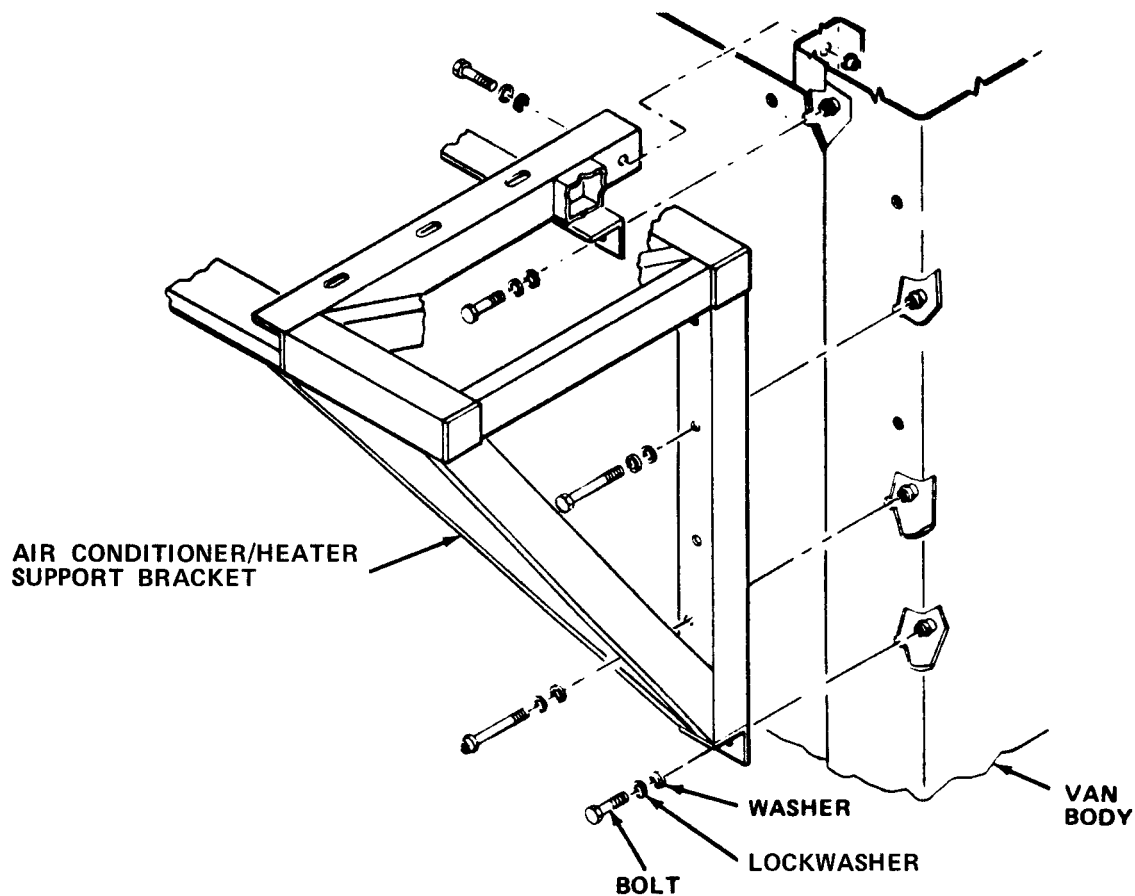
12. Attach lifting sling to replacement.
13. Raise air conditioner/heater. Then lower onto support frame. Remove two sling hooks as unit is eased through hole until grille contacts duct. Remove remaining sling.
14. Reinstall six mounting bolts.
15. Reinstall duct and screws.
16. Reinstall interior and exterior molding. Secure with screws and seal molding to assembly.
17. Reconnect drain line.
18. Plug in power cord.
- 19\* Turn on circuit breaker. Perform operational test.

#### 1.5.3.9 REPLACE AIR CONDITIONER SUPPORT BRACKET.

TOOLS : Tool Kit  
Lifting Equipment

SUPPLIES: Air Conditioner Support Bracket

PERSONNEL: Two



WARNING

- DEATH OR SERIOUS INJURY MAY RESULT FROM FAILURE TO TURN OFF POWER BEFORE SERVICING AIR CONDITIONER/HEATER.
- SERIOUS INJURY TO PERSONNEL OR DAMAGE TO EQUIPMENT MAY OCCUR UNLESS TWO OR MORE PERSONNEL ARE USED TO REMOVE AND REPLACE AIR CONDITIONER/HEATER BECAUSE OF WEIGHT AND BALANCE OF AIR CONDITIONER/HEATER.

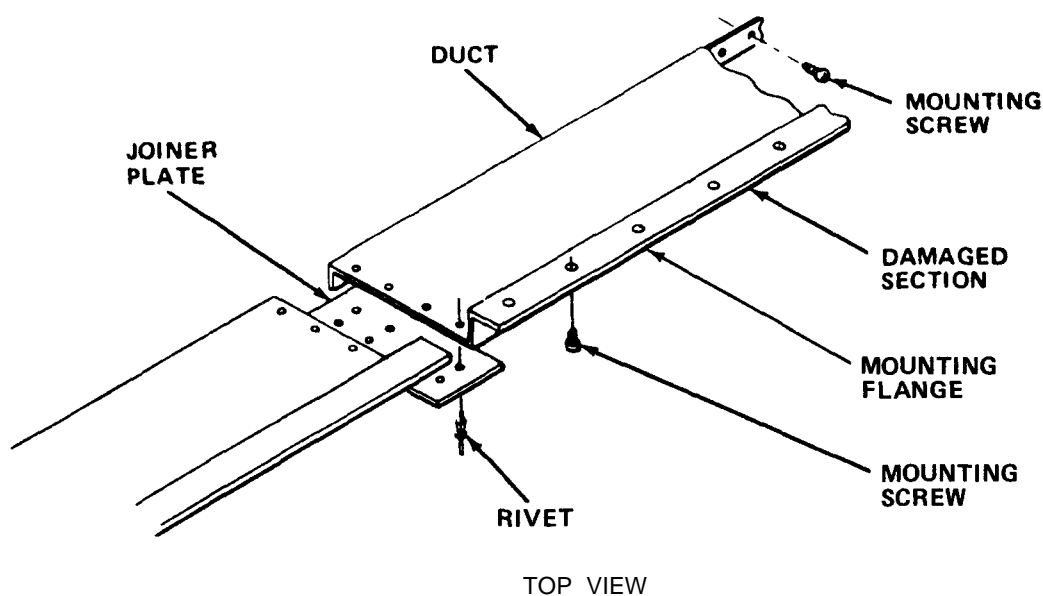
1. Remove air conditioner. (1.5.3.8).
2. Unbolt support bracket and remove bracket.
3. Replace support bracket.
4. Secure support bracket with bolts, lockwashers, and washers.
- 5\* Reinstall air conditioner. (1.5.3.8).
6. Paint as required in accordance with TM 43-0139.

1. 5. 3. 10 REPLACE VENTILATION DUCT.

TOOLS: Hacksaw  
 Drill and Bits  
 Ball-Peen Hammer  
 Rivet Gun  
 Paint Brush  
 Cross-Tipped Screwdriver  
 Flat-Tipped Screwdriver

SUPPLIES: Sealant  
 Wood Block  
 Rivets  
 Paint  
 Cloths  
 Salvaged Ventilation Duct

1. Turn off air conditioner/heater blowing air through damaged duct.



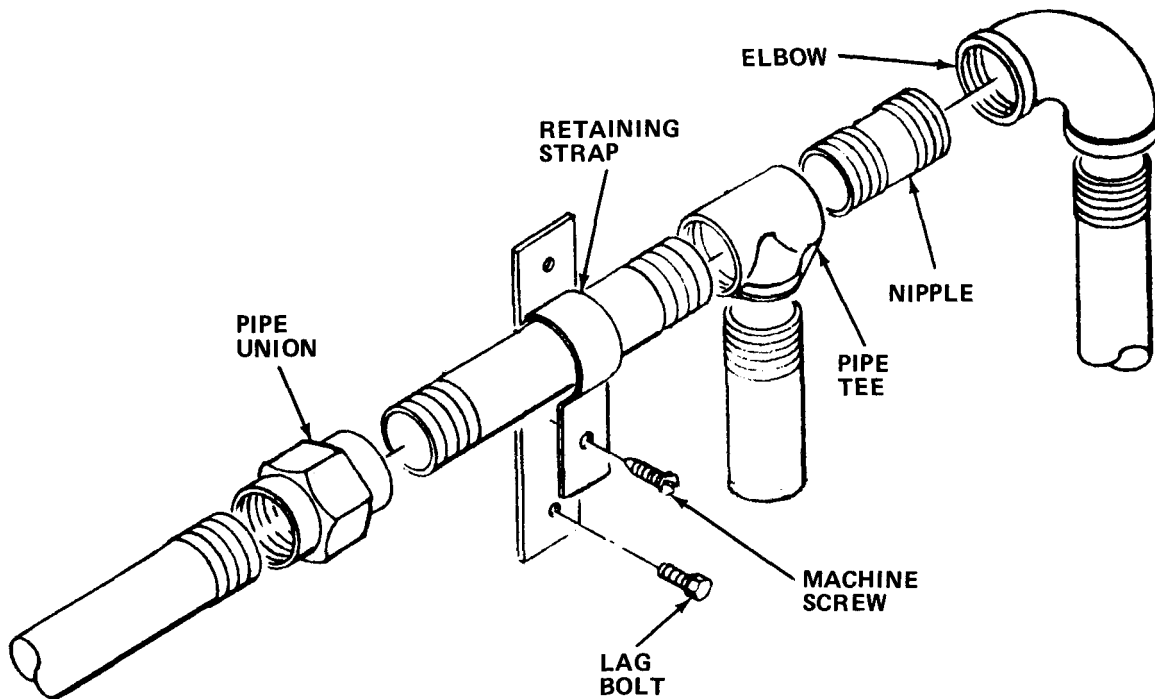
2. Drill rivets from damaged section and good sections of duct, and remove joiner plates.
3. Remove damaged sections of ductwork by removing mounting screws.
4. Straighten remaining sections of ductwork at edges with hammer and wood block.
5. Place sealant bead on all mounting flanges. Then replace duct section with salvaged section and secure to van body with screws.
6. Replace joiner plates and rivets.
7. Turn on air conditioner/heater.

1. 5. 3. 11 REPAIR PLUMBING.

TOOLS: Hand Wire Brush  
Pipe Wrenches  
Tool Kit

SUPPLIES: Joint Tape or Joint Compound  
Salvaged Pipe  
Salvaged Fittings

1. Drain water from system.



2. Remove retaining straps from damaged section by removing machine screws.
3. Remove union closest to damaged section.
4. Remove nipples or pipes as required for access to damaged section.
5. Remove damaged section and replace.
6. Clean male threads with hand wire brush.
7. Wrap threads with tape or coat with joint compound.
8. Reassemble nipples, pipes, elbows, tees as required.



**NOTE**

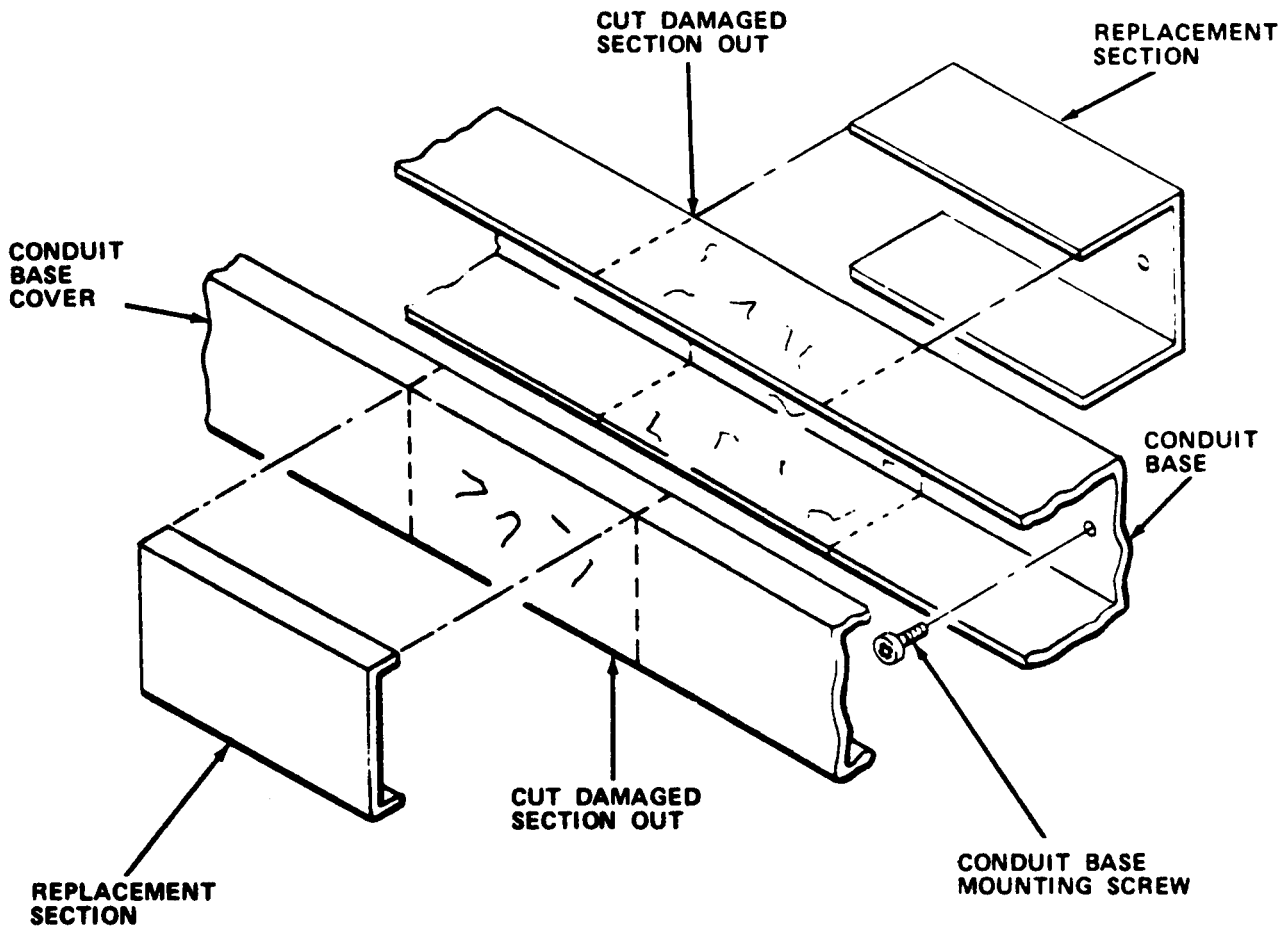
Be sure that assembled sections do not rotate when new fittings are added.

9. Reassemble pipe union to plumbing system last.
- 10.** Fill system with water and perform operational test for leaks and proper functioning.

1.5.3.12 REPAIR WIRE MOULDING.

TOOLS : Tool Kit  
Hacksaw  
Electrical Repair Kit  
Paint Brush  
Multimeter  
Drill and Bits

SUPPLIES: Salvaged Cable Run  
Paint  
Cloth



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**WARNING**

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DEATH OR SERIOUS INJURY MAY RESULT FROM FAILURE TO TURN OFF SAFETY SWITCH BEFORE REPAIRING CABLE RUNS.

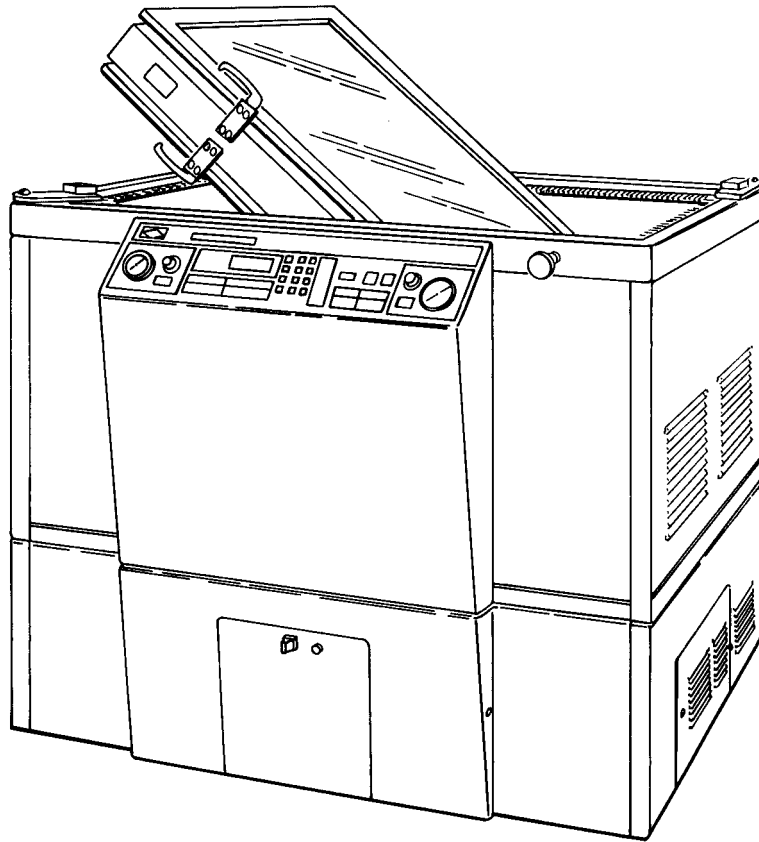
**NOTE**

- A qualified electrician should perform this task.
  - Auxiliary lighting may be required for this procedure.
1. Turn off safety switch and secure with padlock.
  2. Determine general area of fault or damage.
  3. Remove conduit base cover.
  4. Inspect wires for damage. Repair or replace any damaged wires as required.
  5. Inspect conduit base for damage. If damage has occurred, proceed to the next step, otherwise go to step 18.
  6. Loosen wiring and carefully pull it from the entire base section.
  7. Remove screws and conduit base.
  8. Measure damaged area and record readings.
  9. Cut damaged area from base.
  10. Cut new base section to the length recorded in step 8.
  11. Using damaged area as a template, mark mounting holes on new piece.
  12. With a number 25 drill bit, drill holes where marks were placed on new piece.
  13. With file, remove all burred edges.
  14. Paint base section as required.
  15. Reinstall conduit base with screws on wall.
  16. Carefully place wire back in conduit base.
  17. If conduit base cover is damaged, proceed to the next step, otherwise go to step 22.
  18. Measure damaged area and record reading.

**TM 5-3610-259-14**

19. Cut damaged area from cover.
20. Cut new cover section to the length recorded in step 18.
21. With file, remove all burred edges.
22. Paint cover as required.
23. Reinstall cover on base.
24. Test wiring for continuity between power wires and conduit. If there is continuity, determine and correct grounding fault.
25. Turn on power and test equipment for proper operation.





## CHAPTER 2

## FLIP-TOP PLATEMAKER

## Section I. INTRODUCTION

## 2-1. GENERAL INFORMATION.

2-1.1 Scope.

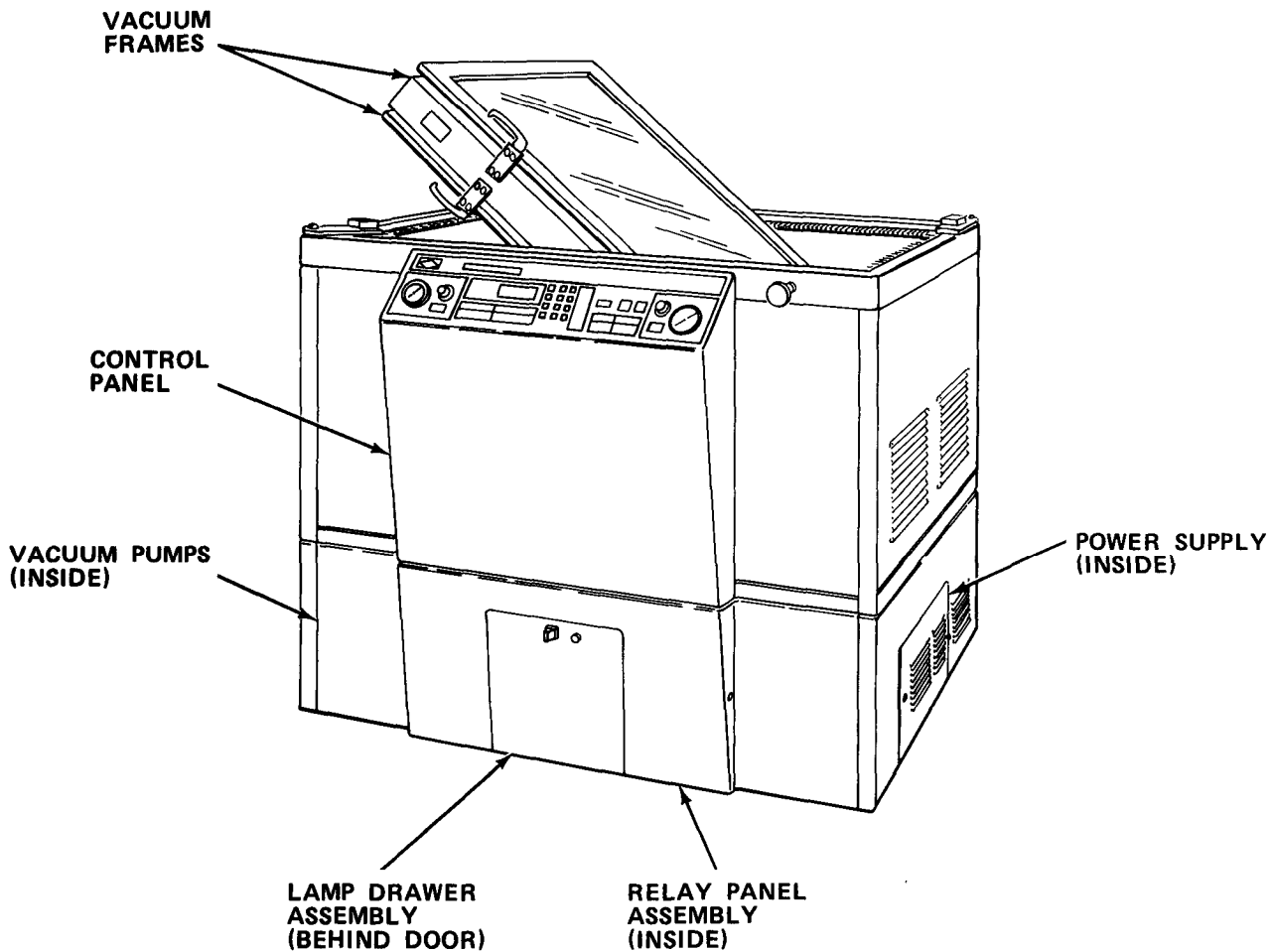
- a. Model Number and Equipment Name. Model FT40V3UPNS, Flip-Top Platemaker.
- b. Purpose of Equipment. To produce offset plates from processed photographic negatives, for lithographic printing.

## 2-2\* EQUIPMENT DESCRIPTION.

2-2.1 Equipment Characteristics, Capabilities, and Features.

- a. Instant start, no shutter.
- b. Built-in light integrator.
- c. Interchangeable light source.
- d. Solid-state power supply.
- e. Back-to-back vacuum frames.
- f. One piece aluminum glass frame.
- g. Lighttight.
- h. Large LED readout.
- i. 3600 to 4500 angstrom range light coverage.

2-2.2 Location and Description of Major Components.



VACUUM PUMPS. Oil-less vacuum pumps made of cast iron with hard carbon vanes.

CONTROL PANEL. Contains the controls for operating the flip-top platemaker.

VACUUM FRAMES. Two glass vacuum frames provide nonstop production. One piece live rubber blankets with permanent molded beading. Stays soft for fast vacuum and **perfect contact.**

POWER SUPPLY. Provides 3000 watt output for use with exposure lamp. Solidated construction for reliable service.

LAMP DRAWER ASSEMBLY. Provides mounting and reflectors for exposure lamp. Mounted on side to allow easy lamp replacement.

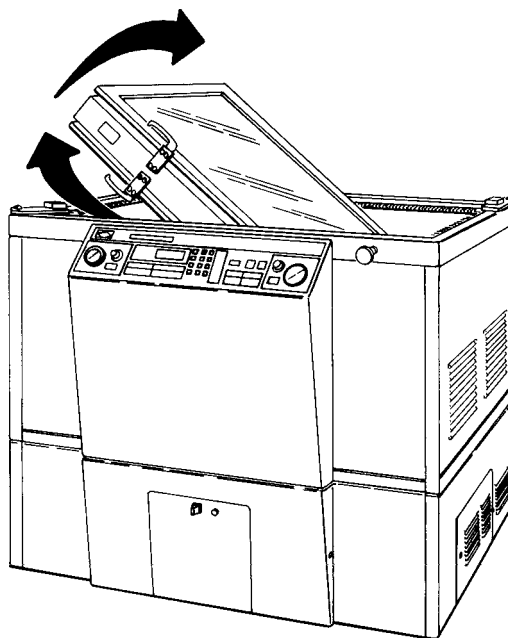
RELAY PANEL ASSEMBLY. Houses relays used with vacuum pumps and exposure lamp. Also contains fuses and master circuit breaker.



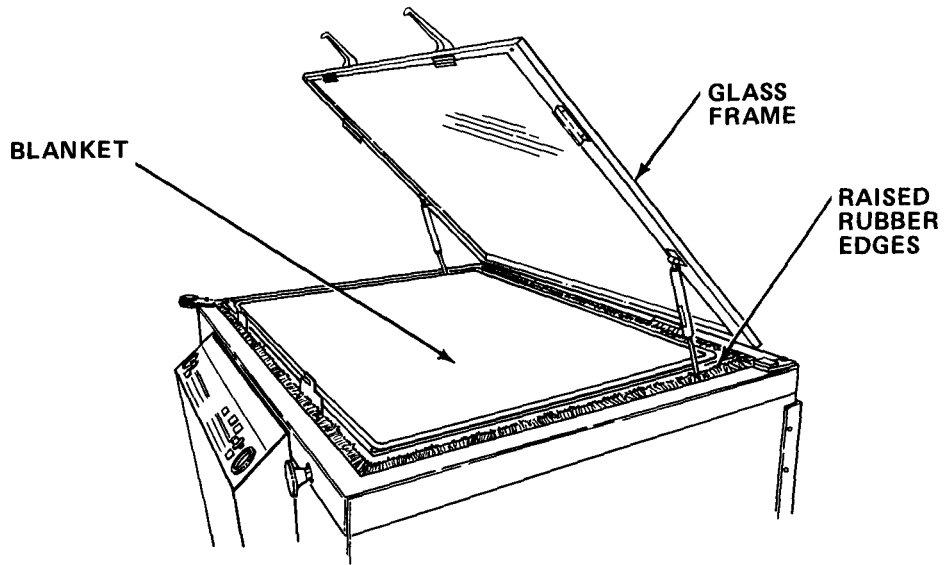
2-2.3 Equipment Data.

Power Requirements	220 V, 60 Hz, single phase, 22 amps
Vacuum Blanket Size	30 in. x 40 in. (77 cm x 102 cm)
Wattage Input to Lamp	3000 w
Dimensions	
Width	48 in. (122 cm)
Depth	48 in. (122 cm)
Height	41 in. (104 cm)
Pump Motors	
Power Output	1/6 hp
Speed	1725 rpm
Ambient Temperature	105°F (40°C)

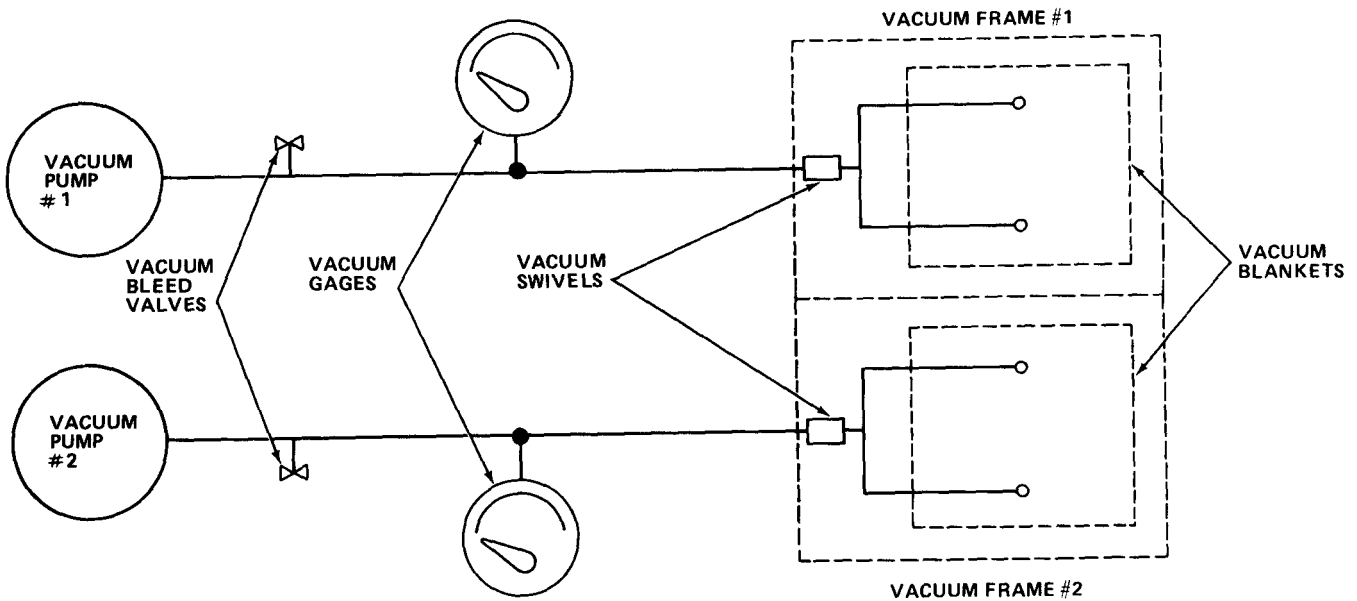
## 2-3. TECHNICAL PRINCIPLES OF OPERATION.



2-3.1 General. The flip-top platemaker provides for nonstop operation by exposing one side while the other side is being loaded. A built-in light integrator automatically controls exposure time in the event that the lamp intensity should vary.



2-3.2 Flip Top Contact Vacuum Frames. Provide sturdy frames for constant use. The blankets are pliable to aid in tight contact required for plate processing. Raised rubber edges around the vacuum blankets provide an airtight seal between the glass and blanket.

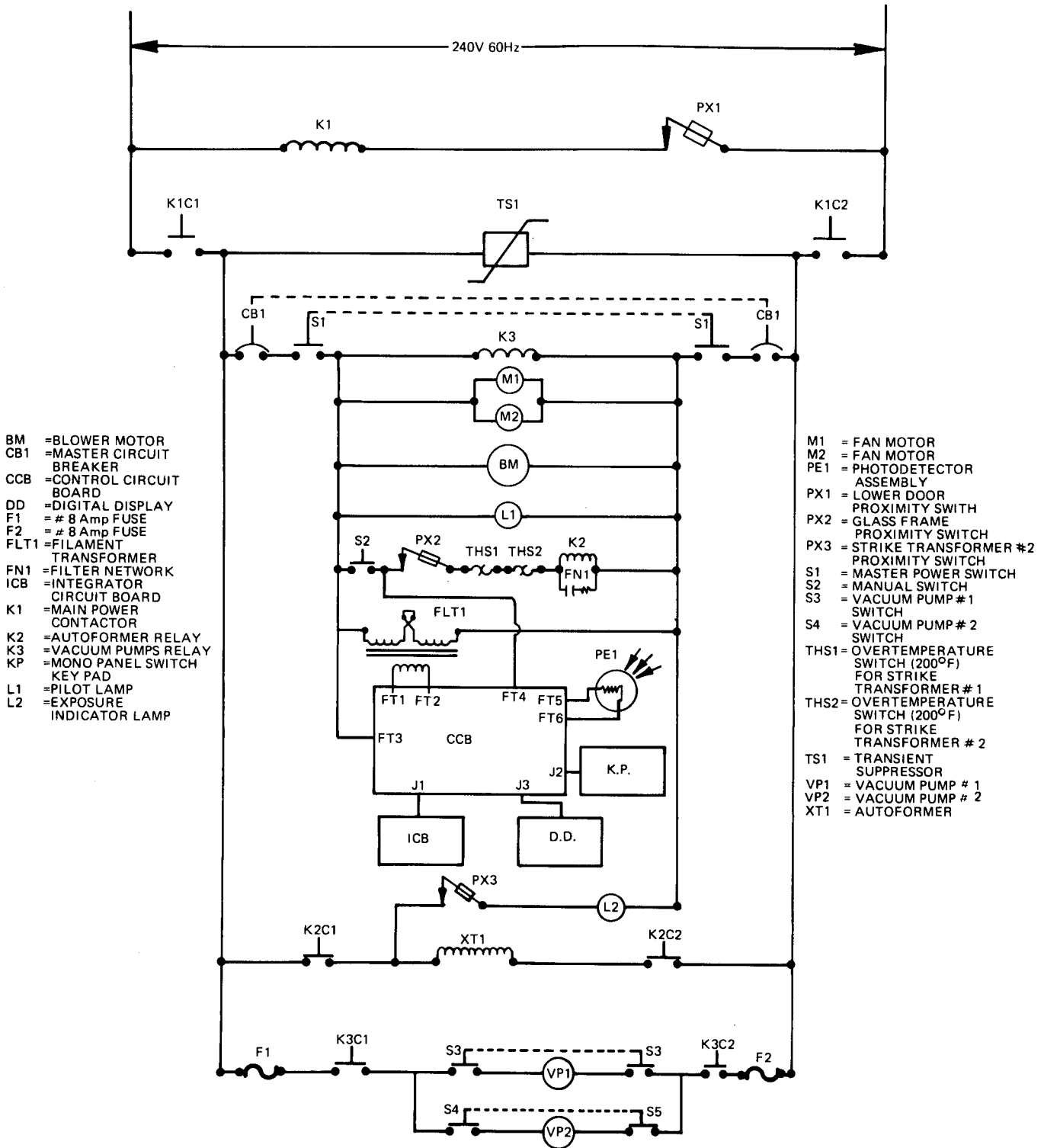


2-3.3 Vacuum Pump System. Produces the vacuum used by the vacuum frames. It is composed of the following components:

a. Vacuum pumps (2). Vacuum pumps are single pumps and motors. The outer end plate, body, rotor, and mounting bracket are all cast iron. The vanes are made of hard carbon and are precision ground. The motor is thermally protected and will automatically restart when the protector resets. (Refer to paragraph 2-3.4c for electrical description.)

b. Vacuum Gages (2). Used to indicate amount of vacuum created in vacuum frames. Indicates from 0-30 lbs. of pressure.

c. Vacuum Bleed Valves (2). Used to bleed the vacuum from the vacuum frames. Valves are needle type valves. Rotating knob to the left will open valve, to the right will close the valve. Can be used to control vacuum pressure.



2-3.4 Electrical System. Consists of six subcircuits. Description of each is as follows:

a. Contactor K1 Power Circuits. With power applied to the flip-top platemaker, contactor K1 (main power contactor) will energize, provided the lower cabinet door is closed, activating proximity switch PX1. Contacts C1 and C2 of contactor K1 being closed will then apply power to the transient suppressor (TS1) which is used to suppress voltage spikes. Power is also made available to the master circuit breaker (CB1), the vacuum pump circuits, and via contacts of K2, the autoformer (XT1).

b. Master Power Switch Circuits. Power is applied to the master power switch (S1) from the master circuit breaker (CB1). Master power switch applies power to the following components:

- (1) Relay K3, used to route power in the vacuum pump circuits.
- (2) Fan Motors (M1 and M2), cooling fans for the 3kW power supply.
- (3) Blower Motor (BM), used to cool exposure lamp and cabinet interior.
- (4) Pilot Lamp (L1), indicates main power switch is on.
- (5) Exposure control circuits.
- (6) Filament Transformer (FLT1), used to supply 12 V ac to control circuit board.

c. Vacuum Pump Circuits. Power for the circuits comes from contactor K1 (main power contactor) contacts. Power is routed through fuses F1 and F2, contacts C1 and C2 of relay K3 (vacuum pumps relay), then through the appropriate vacuum pump switch (S3 or S4), to the vacuum pump. Relay K3 is energized when the master power switch (S1) is on.

d. Exposure Control Circuits. The exposure control circuits are used to energize relay K2 (autoformer relay), which energizes the autoformer. Relay K2 can be energized manually or automatically. For manual operations, power from the master power switch (S1) is routed to the manual switch (S2). With the manual switch closed, power is routed through two overtemperature switches (THS1 and THS2) and the glass frame proximity switch (PX2) to energize relay K2. Overtemperature switches are set at 200°F (93.3°C) and are mounted next to the strike transformers in the power supply circuits. They open in the event that the temperature around the strike transformers reaches 200°F (93.3°C). The glass frame proximity switch is closed when the vacuum frame is locked in its horizontal position. For automatic operation, relay K2 is energized in the same manner as in manual operation. Instead of power coming through switch S2 to THS2, power comes from the electronic circuits. These circuits are comprised of the following components:

- (1) Photodetector Assembly (PE1). Used to detect the intensity of the exposure lamp. It is wired into the control circuit board. The more intense the light, the less resistance applied, which affects exposure time.

(2) Monopanel Switch Keypad (KP). Used to input units of light to be used during exposure. Contains digits 0-9, a "C" key, used to cancel any exposure in progress or to cancel any information entered, prior to pressing the "T" key. The "T" key is used to activate the exposure. The keypad is wired into the control circuit board.

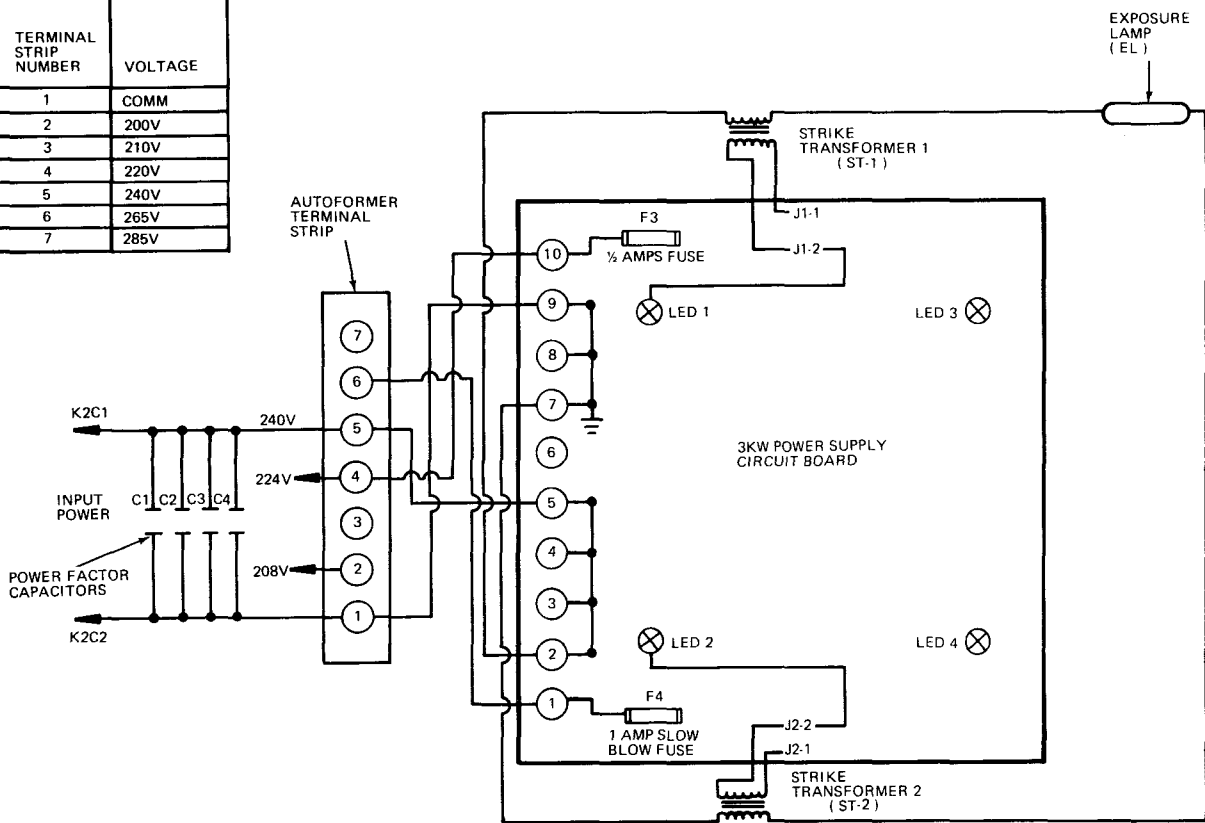
(3) Digital Display (DD). Used to display the units of light entered via the keypad. During exposure, the digital display will count down. At the end of the exposure, the display will return to the units of light that were originally entered. The digital display is wired into the control circuit board.

(4) Integrator Circuit Board (ICB). Used to control the exposure time based on the units of light entered and the intensity of the lamp based on input from photodetector assembly (PE1). It is mounted directly onto the control circuit board.

(5) Control Circuit Board (CCB). Receives inputs from other circuits. Contains an electronic relay which is used to apply power to relay K2, via the overtemperature switches (THS1 and THS2) and glass frame proximity switch (PX2).

Exposure Indicator Lamp (L2). Power is received through proximity switch PX3. PX3 is located next to strike transformer #1 (ST-1) and is activated whenever ST-1 is energized.

TERMINAL STRIP NUMBER	VOLTAGE
1	COMM
2	200V
3	210V
4	220V
5	240V
6	265V
7	285V



- LED 1 : LIT WHEN STRIKE PULSES ARE GENERATED FOR ST 1.
- LED 2 : LIT WHEN STRIKE PULSES ARE GENERATED FOR ST 2.
- LED 3 : OFF IF INPUT VOLTAGE IS TOO HIGH
- LED 4 : OFF IF INPUT VOLTAGE IS TOO LOW.

f. Power Supply Circuit. Provides 3000 watts of power to the exposure lamp. It is comprised of the following components:

(1) Autoformer (XT1). A step up/down transformer used to supply power to the strike transformers and the 3kW power supply circuit board. Receives power via contacts C1 and C2 of the autoformer relay (K2).

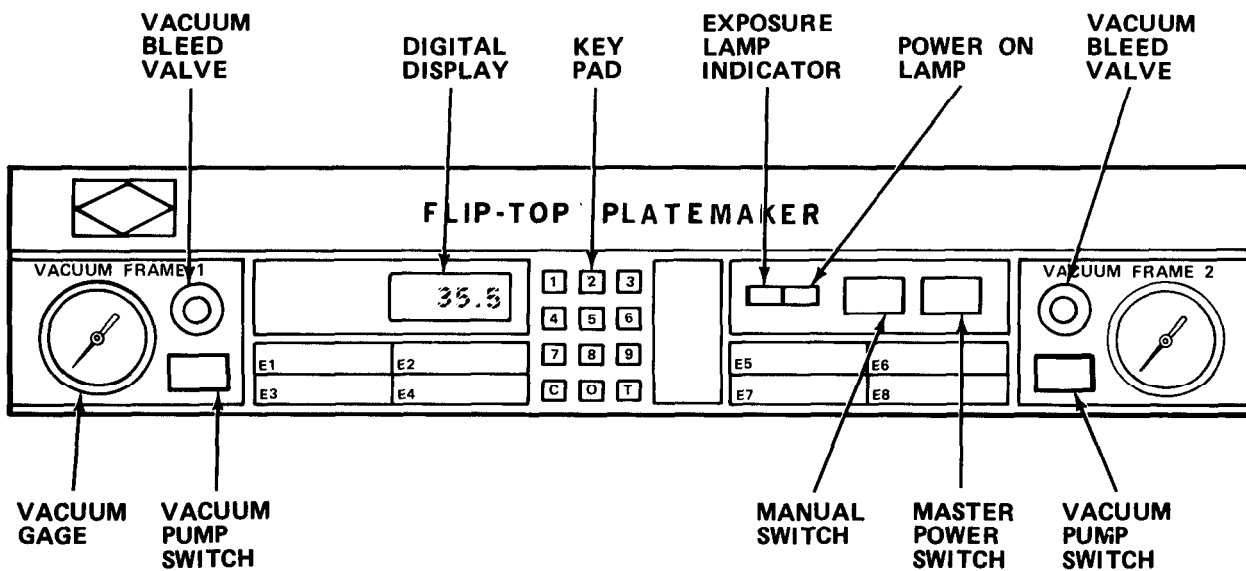
(2) Power Factor Capacitors (C1-C4). Provide for filtering and stabilization of input power to autoformer.

(3) 3kW Power Supply Circuit Board. Receives power from autoformer. Monitors input line voltage and will shut down if input power is too high or too low. Contains circuits for detecting phasing and generating trigger pulses. These trigger pulses are used in the high voltage strike pulse generator circuits. The high voltage strike pulse generator circuits apply high voltage pulses to the strike transformers. Four LEDs on circuit board indicate operation. Two fuses provide circuit protection.

(4) Strike Transformers (ST-1 and ST-2). Generate the 3000 watts used by the metal halide exposure lamp. The secondary side of the transformers are wired to input power and to the exposure lamp. The primary is wired directly into the 3kW power supply circuit board.

Section II. OPERATING INSTRUCTIONS

2-4. DESCRIPTION AND USE OF OPERATOR'S CONTROLS AND INDICATORS.





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CONTROL OR INDICATOR	FUNCTION
Vacuum Gages (2)	Indicate vacuum pressure in the vacuum frames. Scaled from 0-30 lbs.
Vacuum Pump Switches (2)	Apply power to the vacuum pumps.
Vacuum Bleed Valves (2)	Used to relieve or adjust the vacuum pressure.
Digital Display	Displays units of light entered. Counts down during exposure. Returns to entered units of light at end of exposure.
Keypad	Used to enter units of light to be used for exposure. Contains digits 0-9. "C" key is used to cancel entered numbers or operation in progress, prior to pressing the "T" key. The "T" key is used to start exposure process.
EXPOSING Indicator Lamp	Indicates exposure in progress.
POWER ON Lamp	Indicates master POWER switch is on.
MANUAL Switch	Used for manual control of exposure time.
Master POWER Switch	Applies power to control circuits, fan motors and blower.
Frame Release Knob	Used to unlock and lock vacuum frames. Pulling knob out allows frames to be rotated.
Master Circuit Breaker	Circuit breaker for control circuits. Located behind lower cabinet door.

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**2-5. OPERATOR PREVENTIVE MAINTENANCE CHECKS AND SERVICES.**

Before You Operate. Always keep in mind the WARNINGS and CAUTIONS. Perform your before (B) PMCS.

b. While You Operate. Always keep in mind the WARNINGS and CAUTIONS. Perform your during (D) PMCS.

c. After You Operate. Be sure to perform your after (A) PMCS.

d. **If** Your Equipment Fails to Operate. Troubleshoot with proper equipment. Report any deficiencies using the proper forms. See DA Pam 738-750.

2-5.1 PMCS Procedures.

PMCS are designed to keep the equipment in good working condition by performing periodic service tasks.

b. Service intervals provide you, the operator, with time schedules that determine when to perform specified service tasks.

c. The "Equipment is Not Ready/Available **If**" column is used for identification of conditions that make the equipment not ready/available for readiness reporting purposes or denies use of the equipment until corrective maintenance is performed.

d. If your equipment fails to operate after PMCS is performed, immediately report this condition to your supervisor.

e. Perform weekly as well as before operation if you are the assigned operator and have not operated the item since the last weekly or if you are operating the item for the first time.

f. Item number column. Item numbers are assigned in chronological ascending sequence regardless of interval designation. These numbers are used for your "TM Number" column on DA Form 2404, Equipment Inspection and Maintenance Worksheet in recording results of PMCS.

Interval column. This column determines the time period designated to perform your PMCS.

h. Item to be inspected and procedures column. This column lists functional groups and their respective assemblies and subassemblies as shown in the Maintenance Allocation Chart (Appendix B). The appropriate check or service procedure follows the specific item to be inspected.

i. Equipment is not ready/available if: column. This column indicates the reason or cause why your equipment is not ready/available to perform its primary mission. List of tools and materials required for PMCS is as follows:

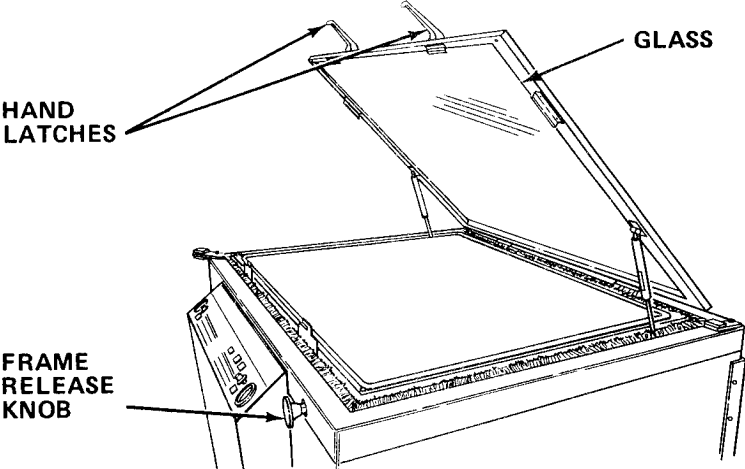
<u>Item</u>	<u>Quantity</u>
Glass Cleaner (Item 18, Appendix E)	ar
Cheesecloth (Item 7, Appendix E)	ar

Table 2-1. OPERATOR PREVENTIVE MAINTENANCE CHECKS AND SERVICES

NOTE

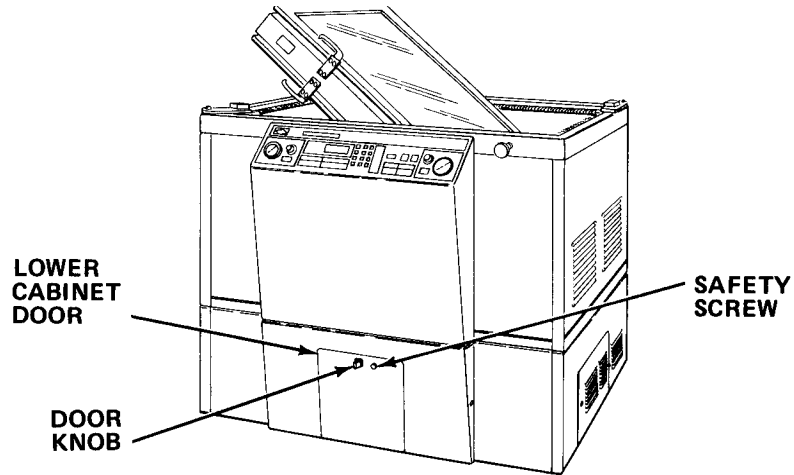
If the equipment must be kept in continuous operation, check and service only those items that can be checked and serviced without disturbing operation. Make the complete checks and services when the equipment can be shut down.

B - Before                      W - Weekly                      AN - Annually                      (Number) - Hundreds of Hours  
 D - During                      M - Monthly                      S - Semiannually  
 A - After                      Q - Quarterly                      BI - Biennially

ITEM NO.	INTERVAL	ITEM TO BE INSPECTED  PROCEDURE	For Readiness Reporting, Equipment Is Not Ready/ Available If:
1	B	<p><u>FLIP-TOP PLATEMAKER</u></p> <p><u>Clean Glass.</u></p>  <p>The diagram shows a perspective view of a flip-top plate maker. It features a rectangular glass frame supported by two lift arms. Labels with arrows point to the 'HAND LATCHES' on the top edge of the frame, the 'GLASS' surface, and the 'FRAME RELEASE KNOB' on the side of the frame.</p> <ol style="list-style-type: none"> <li>1. Use cheesecloth moistened with glass cleaner to clean top of glass surface.</li> <li>2. Unlock the left- and right-hand latches and lift glass frame until the two lift arms take hold and open frame completely.</li> <li>3. Use cheesecloth moistened with glass cleaner to clean underside of glass surface.</li> <li>4. Lower glass frame and lock the left- and right-hand latches in place.</li> <li>5. Pull out frame release knob and flip glass frame over and lock into place.</li> <li>6. Repeat steps 1-4 for second glass frame.</li> </ol>	

2-6. OPERATION UNDER USUAL CONDITIONS.

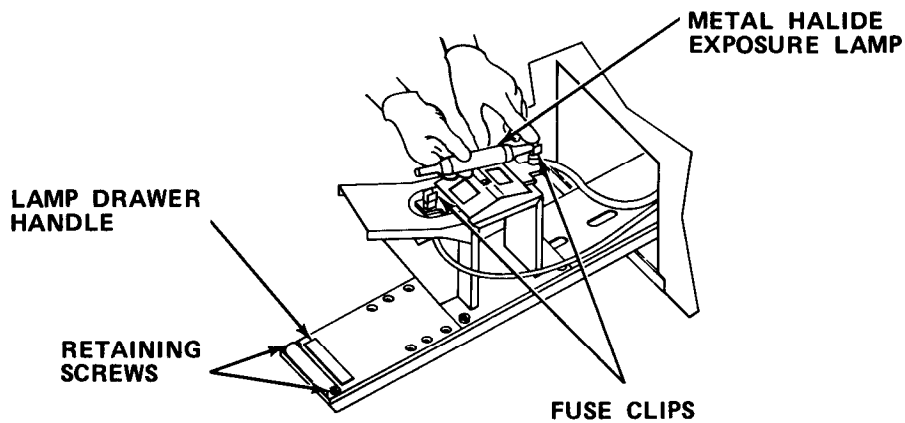
2-6.1 Assembly and Preparation for Use.



**WARNING**

Death or serious injury may occur unless circuit breaker and platemaker main POWER switch are off before servicing.

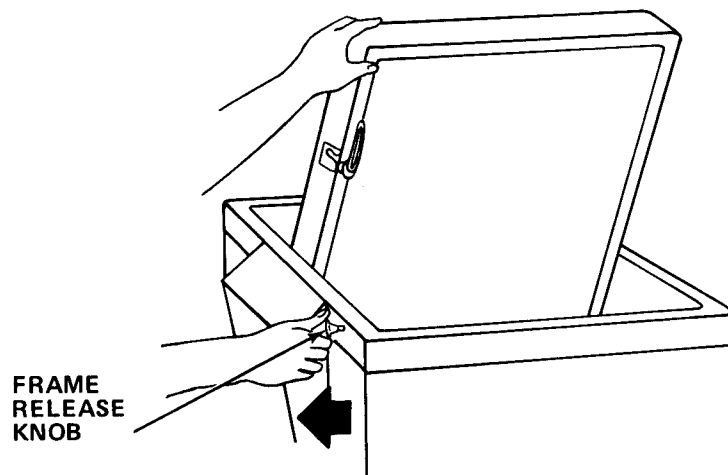
- a. Turn off platemaker main POWER switch and circuit breaker.
- b. Rotate two vacuum frame holddown brackets on corners.
- c. Installation of metal halide exposure lamp.
  - (1) Remove safety screw from lower cabinet door.
  - (2) Turn door knob and open lower cabinet door.



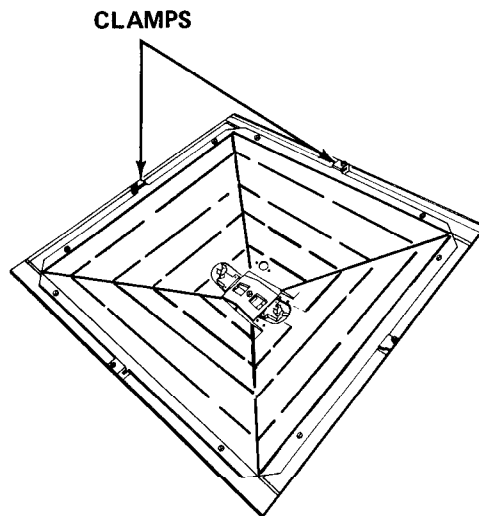
- (3) Remove two retaining screws from each side of 1 amp drawer handle.
  - (4) Pull drawer out as far as it will go.
  - (5) Wearing white gloves, install metal halide exposure lamp into fuse clips.
  - (6) Slide lamp drawer all the way back into cabinet.
  - (7) Reinstall two retaining screws to hold drawer in place.
  - (8) **Close lower cabinet** door and turn door locking knob to lock door.
  - (9) Reinstall safety screw on lower cabinet door.
- d. Installation of glass light shield.

CAUTION

Glass light shield must be installed or lamp will overheat.



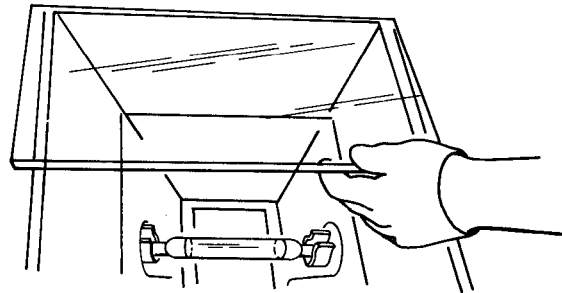
- (1) Pull the frame release knob out and flip glass frame into a vertical position.



(2) Reaching down through top of unit, remove two hex head screws and clamps from each side of reflector.

(3) Carefully remove glass light shield from glass holder on wall.

(4), Use cheesecloth moistened with glass cleaner to clean both sides of glass surface.



**CAUTION**

To prevent damage to equipment, two persons are required to reinstall glass light

(5) Using white gloves, carefully set glass light shield into position over the exposure lamp and reflector.

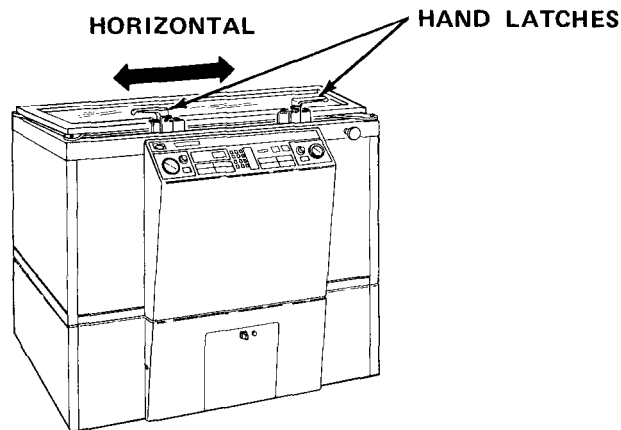
(6) Reinstall glass clamps and hex head screws.

(7) Rotate glass frame into its horizontal position and lock into place with frame release knob.

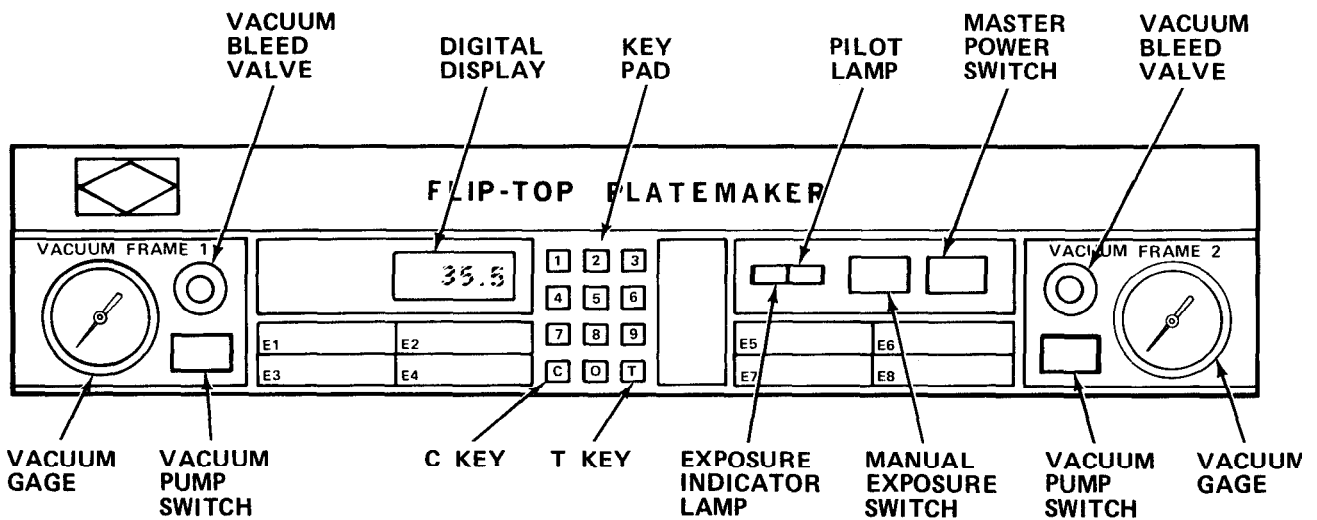
(8) Turn on circuit breaker and platemaker main power switch.

2-6.2 Initial Adjustments, Daily Checks, and Self Tests.

- a. Turn on power panel circuit breaker.



- b. Be sure glass frame is in its horizontal position and locked in place.
- c. Be sure left- and right-hand latches are locked in place.



- d. Press master power switch on and verify that fan motors, blower motor and pilot lamp are on.
  - e. Verify vacuum bleed valve for vacuum frame in the up position is closed.
  - f. Press vacuum pump switch for vacuum frame in the up position.
- Verify vacuum is created in vacuum frame by observing appropriate vacuum gage.
- h. Verify vacuum builds up until needle reaches the green area of the gage (approximately 25 pounds).

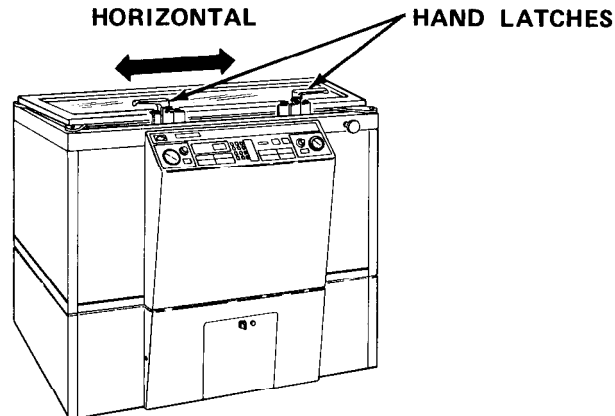
- i. Press manual exposure switch and verify that exposure indicator lamp lights, and observe that light source is visible through light security brush.
- j. Press off manual exposure switch.
- k. Press numerical keys on keypad to enter 10.0 units of light. Verify 10.0 appears on digital display.
- l. Press "T" key on keypad to activate the exposure. Verify that digital display counts down, and that exposure indicator lamp lights.

When exposure is complete, verify that exposure indicator lamp goes off and that digital display shows 10.0.

- n. Press off appropriate vacuum pump switch.
- o. Open appropriate vacuum bleed valve and verify vacuum is exhausted.
- p. Pull out on frame release knob; flip glass frame over and lock in place.
- q. Repeat steps e - o for other vacuum frame.

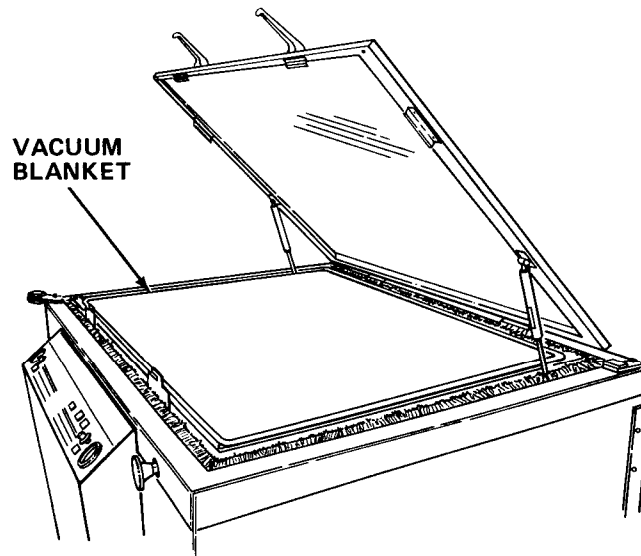
### 2-6.3 Operating Procedures.

- a. Turn on power panel circuit breaker.



- b. Be sure glass frame is in horizontal position and locked in place.
- c. Unlock the left- and right-hand latches and lift glass frame until the two lift arms take hold and open frame completely.
- d. Verify glass is clean on both sides.



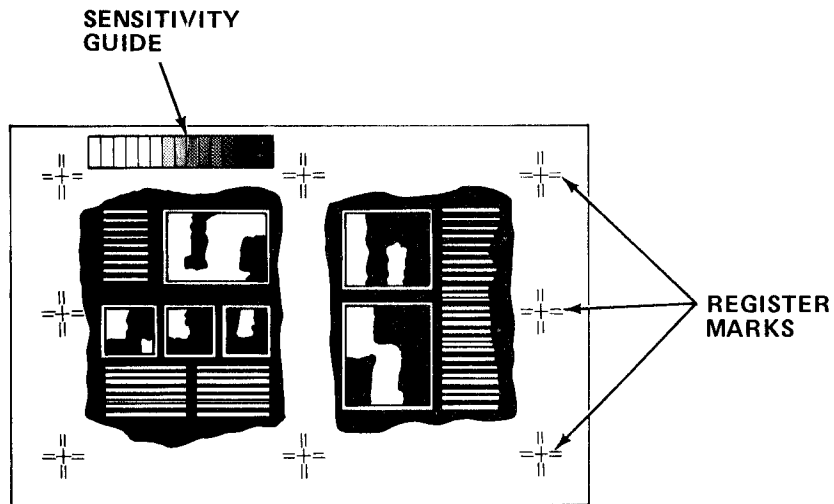


e. Make sure that vacuum blanket is clean and that vacuum-exhaust holes remain uncovered.

#### NOTE

If additional flats are to be exposed on the same plate, or if the plates to be used for multiple color printing, register marks should be inserted in the flats, or some sort of register system should be used to register the job. Register marks are placed so they expose the plate outside the image area, so they can be trimmed off after the job is printed.

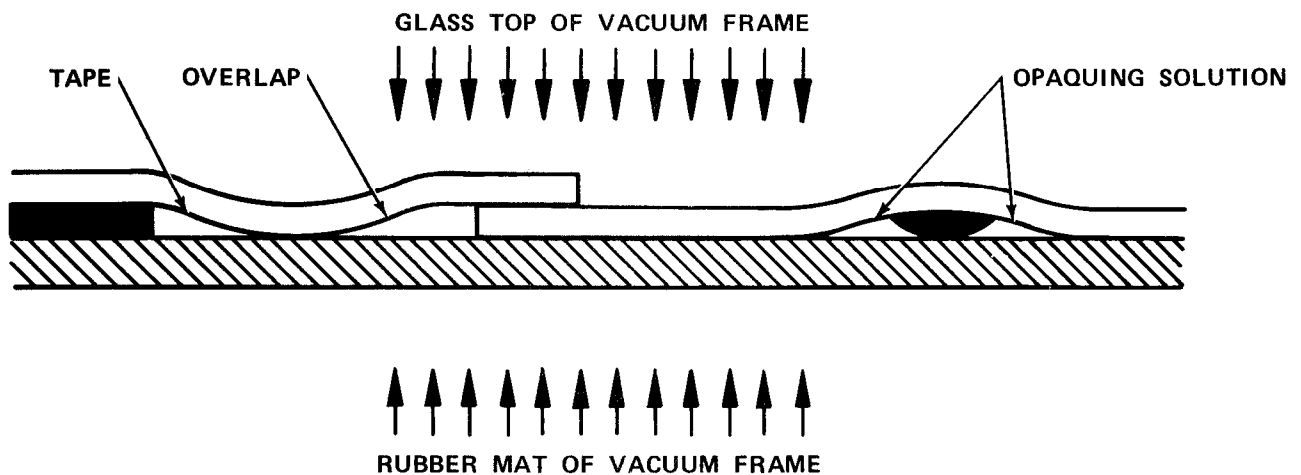
The sensitivity guide is designed to overcome the problem of incorrect exposure. The guide is stripped into the edge of the flat in a nonprinting area, usually the outer edge.



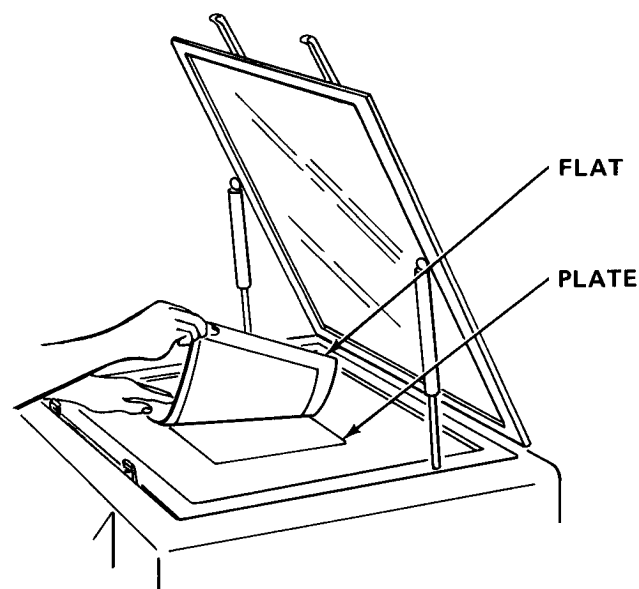
f. Strip a sensitivity guide into the edge of the flat.

**NOTE**

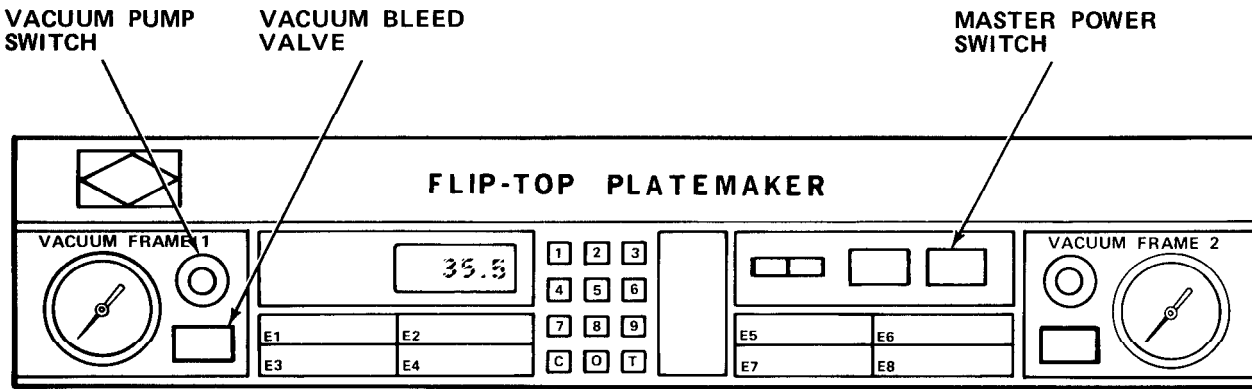
- Standard masking materials should always be used in making the flat. These are materials that will prevent the exposing light going through to the plate. In the stripping procedure on the light table, however, film can be read through the masking sheet. The film contained in the flat should be free of pinholes, dust, dirt, and tape adhesive residue.
- Since the plate must pick up fine detail such as fine halftone dots, the plate will also reproduce pinholes, opaquing, and dust specks on the image area. Pinholes should be covered with opaquing solutions prepared for this purpose. Film should be cleaned with film cleaner or an anti-static brush.



- Poor contact with plate will result if excess tape is used, or if pieces of film are overlapped. Opaquing solutions for covering pinholes should be properly thinned. A solution that is too thick will prevent perfect contact.
  - Handle flats and plates carefully to avoid kinks and creases that will result in poor contact points. Lift flats and plates by opposite corners to help prevent kinking and scratching.
  - Avoid fingerprints on film and plates.
  - Handle films and plates only under lights recommended by manufacturer.
- g. Place presensitized surface plate on vacuum blanket.



- h. Place flat on top of plate, using your register system, or aligning the flat with the lead edge of the plate.
- i. Lower glass frame and lock left- and right-hand latches in place.



- j. Be sure that vacuum bleed valve for loaded vacuum frame is closed.
- k. Press master POWER switch, if not already on.
- l. Press vacuum pump switch for loaded vacuum frame.

**NOTE**

Watch the effect of the vacuum on flat and plate. **If** air pockets form, release the vacuum by opening the bleed valve and start again.

Wait for the vacuum to build up until needle reaches the green area of the gage (approximately 25 pounds).

Pull out on frame release knob and flip glass frame over to face exposure lamp and lock in place.

**NOTE**

"Units of light" or "light units" refer to the amount of light needed to expose a particular material. Following plate manufacturer's recommendations for the specific type of plate used and for the nature of the material being exposed, will yield consistent, excellent results. Correct use of the sensitivity guide aids in determining and checking proper exposure times. 30 units of light is a good starting point.

- o. Press numerical keys on keypad to enter necessary units of light.
- p. Verify that digital display reads correct units of light.

Press "T" key on keypad to activate the exposure. Verify that digital display counts down and that exposure indicator lamp lights.

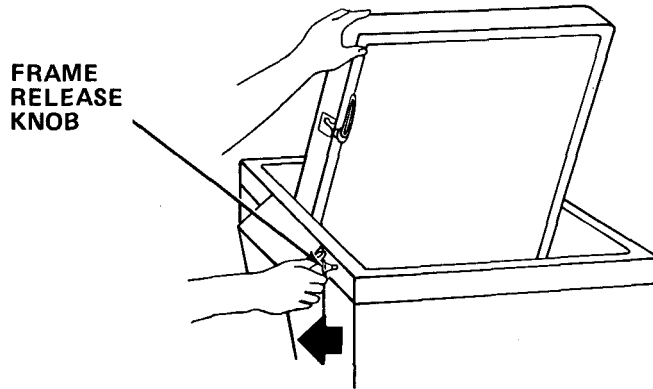
r. **If** a second plate is to be produced, repeat steps c - m to prepare second vacuum frame while first frame is being exposed.

When exposure is complete, pull out on frame release knob and flip glass frame over so that second vacuum frame faces exposure lamp and **lock** in place.

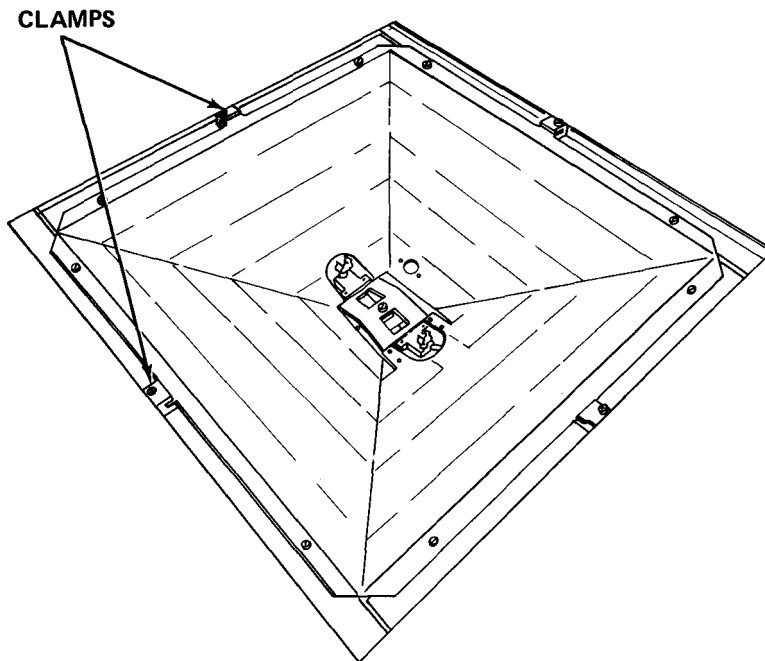
- t. If a second plate is being produced, perform steps o - q before continuing.
- u. Press off vacuum pump switch for newly exposed plate.
- v. Open bleed valve to bleed off vacuum for vacuum frame on top.
- w. Unlock left- and right-hand latches and lift glass frame until the two lift arms take hold and open the frame completely.
- x. Carefully remove and separate flat from plate. Store flat in a safe place.
- y. Process newly exposed plate.
- z. If more plates are to be processed, repeat steps c - m to prepare vacuum frame.
  - aa. If second plate is being processed, repeat steps s - x to finish second plate.
  - ab. If all plate processing is complete, press off master POWER switch.

2-6.4 Preparation for Movement

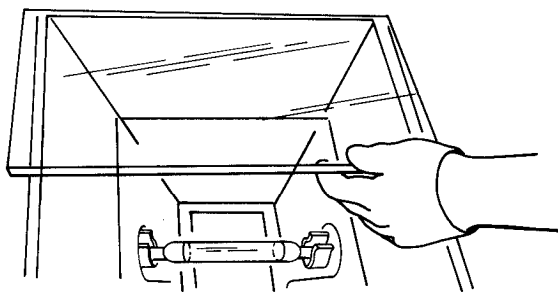
- a. Turn off power panel circuit breaker.
- b. Open glass holder on inside cargo door.
- c. Removal of glass light shield:



(1) Pull frame release knob out and flip glass frame into a vertical position.



(2) Reaching down through the top of unit, remove two hex head screws and clamps from each side of glass shield.



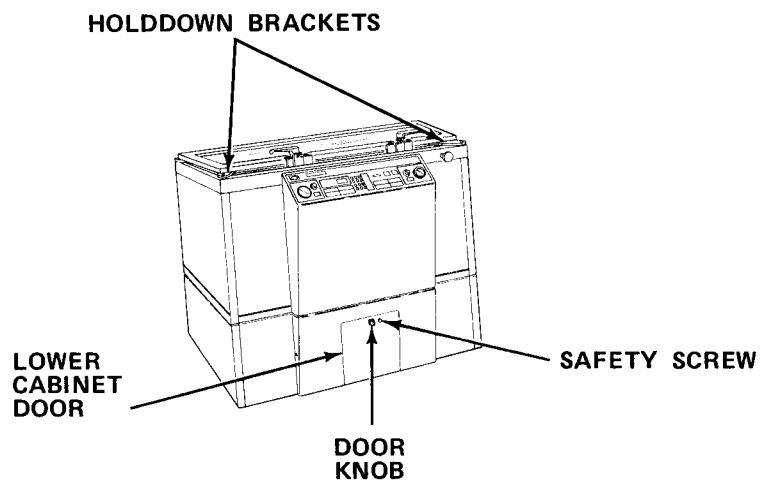
### WARNING

If platemaker has been used recently, the glass light shield will be extremely hot, and may cause serious burns. To prevent injury, use gloves or rags when removing glass light shield.

(3) Using white gloves, carefully remove glass light shield and store in glass holder on wall.

(4) Reinstall two hex head screws and clamps on each side of reflector.

(5) Rotate glass frame into horizontal position and lock into place with frame release knob.

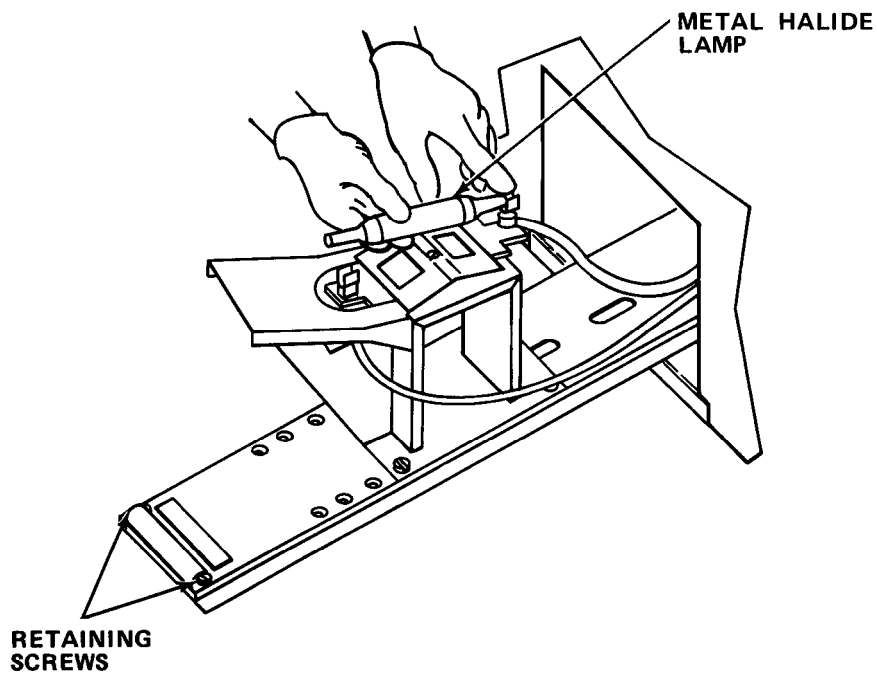


c. Rotate two vacuum frame holddown brackets on corners to lock vacuum frame in place.

d. Removal of metal halide exposure lamp.

(1) Remove safety screw from lower cabinet door.

(2) Turn door knob and open lower cabinet door.



(3) Remove two retaining screws from each side of 1 amp drawer handle.

(4) Pull drawer out as far as it will go.

(5) Wearing white gloves, remove metal halide exposure 1 amp from fuse clips and store.

(6) Slide lamp drawer all the way back into cabinet.

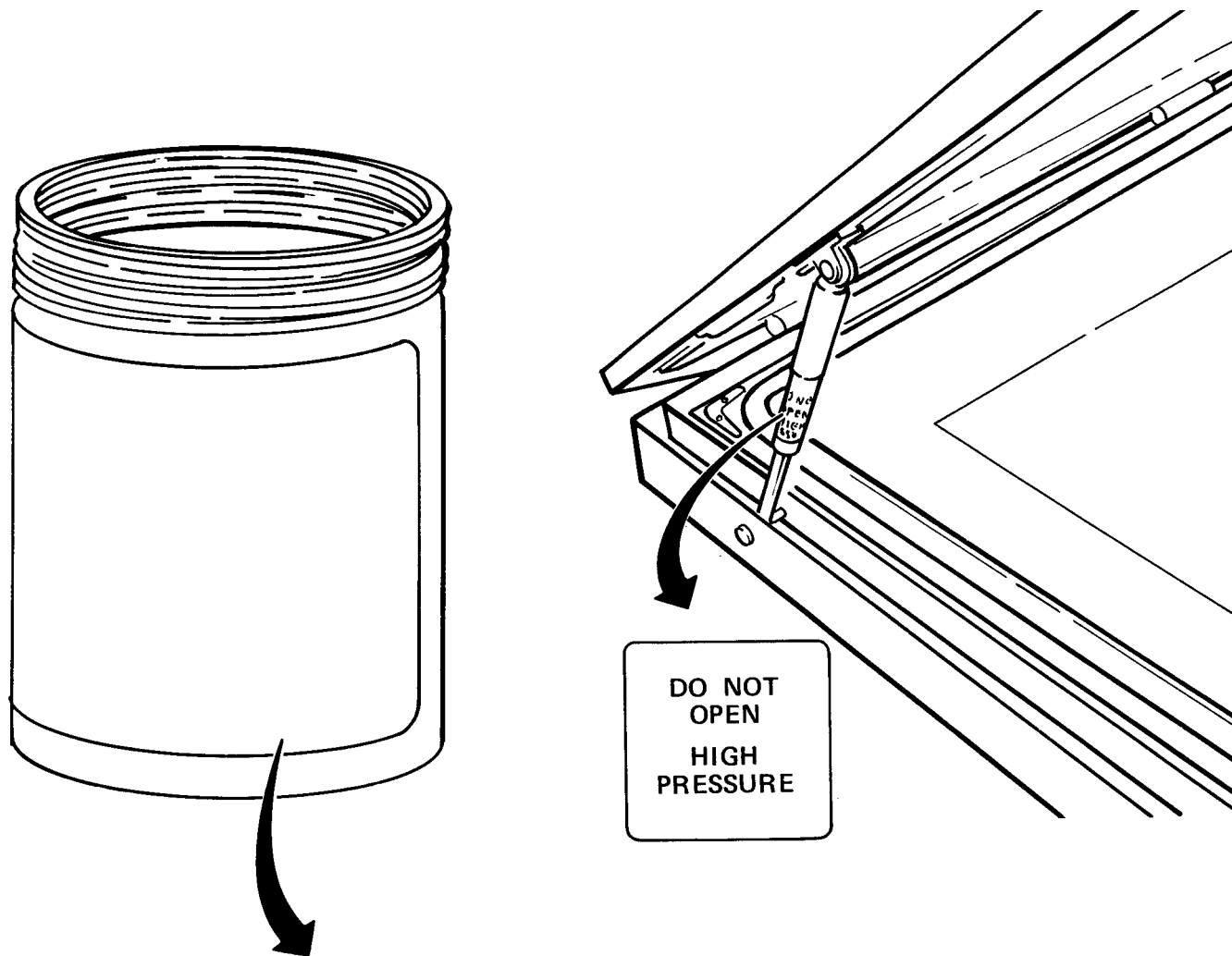
(7) Reinstall two retaining screws to hold drawer in place.

(8) Close lower cabinet door and turn door locking knob to lock **door**.

(9) Reinstall safety screw on lower cabinet door.



2-6.5 Operating Instructions on Decals and Instruction Plates.



WHEN INSTALLED - AS INTAKE FILTER:

INCOMING AIR MUST ENTER JAR FIRST.

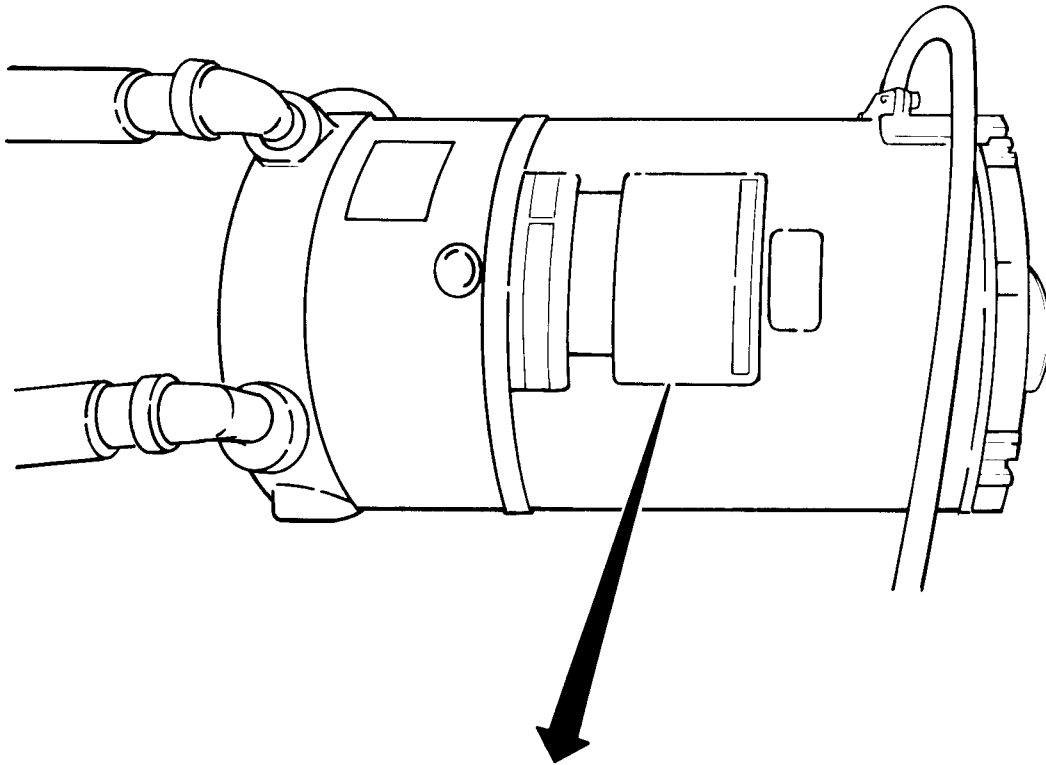
AS EXHAUST MUFFLER:

ON LUBRICATED PUMP: AIR MUST PASS THRU FILTERING ELEMENT FIRST BEFORE ENTERING JAR FOR BEST SILENCING AND SEPARATION OF OIL VAPOR. EMPTY OIL AND/OR MOISTURE BEFORE THE LIQUID LEVEL REACHES FELT.

ON OIL - LESS PUMP: AIR MUST ENTER JAR FIRST FOR BEST COLLECTION OF GRAPHITE DUST FROM CARBON VANES.

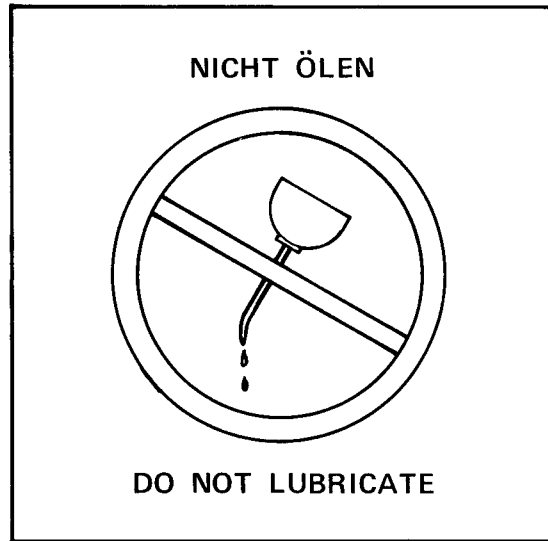
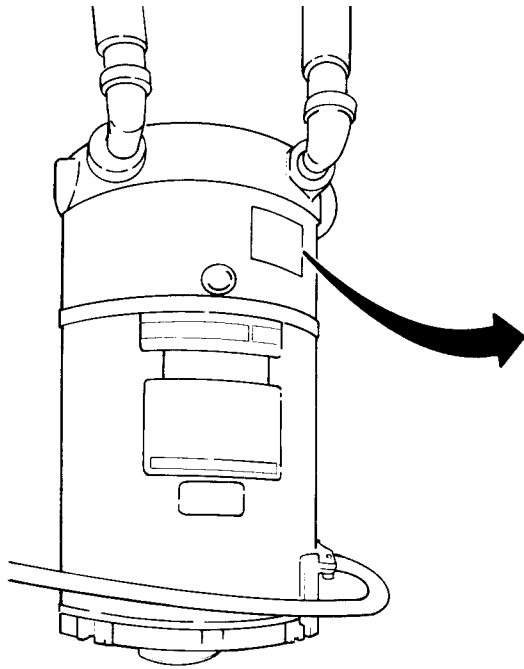
CAUTION: GLASS JAR COULD EXPLODE IF SUBJECTED TO MORE THAN 5 P.S.I.G./35 bar (METAL JAR SAFE TO 30 P.S.I.G./2 bar)

IMPORTANT: CLEAN FELTS EVERY 100 HOURS. REPLACE FELTS TWICE A YEAR

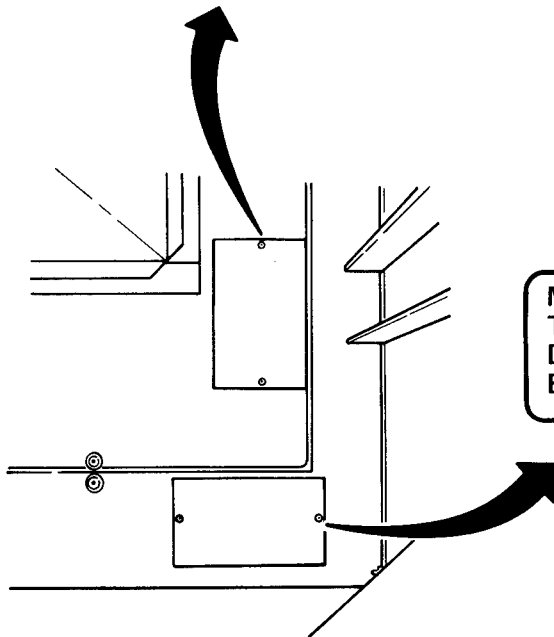


**CAUTION**

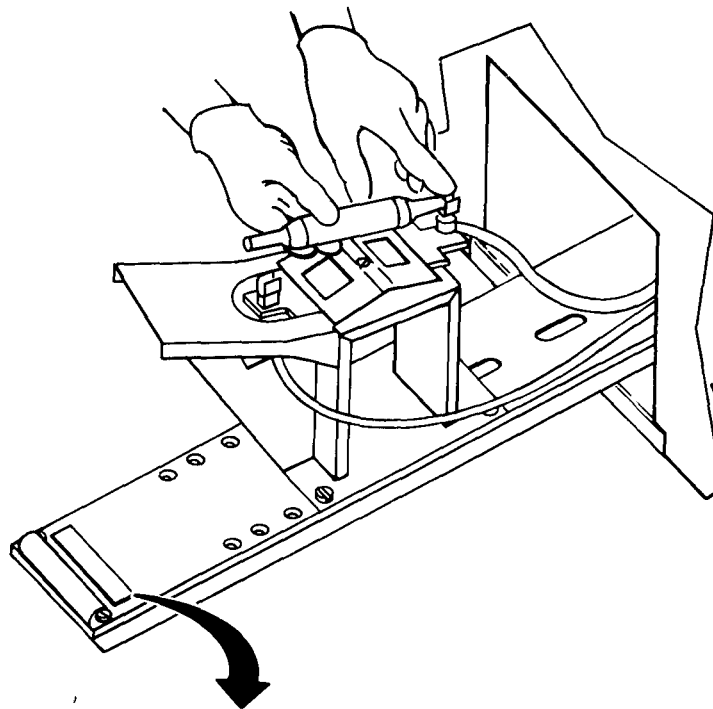
**NEVER LUBRICATE THIS OIL - LESS PUMP.  
FLUSHING WHILE RUNNING PUMP,  
SLOWLY FEED 1 TO 2 OZ. OF LOCTITE  
SAFETY SOLVENT, DOW CHEMICAL SOLVENT  
OR EQUIV. SOLVENTS WITH A TOXICITY  
RATING OF 500PPM OR GREATER INTO  
INLET. DO NOT INHALE FUMES, FLUSH  
IN OPEN AREA AWAY FROM OPEN FLAME.  
DO NOT USE A PETROLEUM BASE SOLVENT**



**MAIN CONTACTOR CONTROLLING POWER TO THIS UNIT IS BELOW THIS PLATE. DISCONNECT UNIT FROM POWER SOURCE BEFORE SERVICING THIS CONTACTOR.**



**MAIN CONTACTOR CONTROLLING POWER TO THIS UNIT IS BELOW THIS PLATE. DISCONNECT UNIT FROM POWER SOURCE BEFORE SERVICING THIS CONTACTOR.**



**CAUTION:** USE HT121 OR KM5 LAMP, 3000W

**WARNING:** EYE AND SKIN DAMAGE MAY RESULT FROM DIRECT VIEWING OF, OR EXPOSURE TO, THE LAMP IN THIS UNIT. ALWAYS TURN OFF LAMP BEFORE PERFORMING ANY MAINTENANCE.

2-7. **OPERATION UNDER UNUSUAL CONDITIONS.** This equipment is designed for operation only in a controlled environment.

Section **III. OPERATOR MAINTENANCE**

2-8. **LUBRICATION INSTRUCTIONS.** This equipment does not require lubrication.

2-9. **TROUBLESHOOTING PROCEDURES.**

a. The table lists the common malfunctions which you may find during the operation or maintenance of the flip-top platemaker, or its components. You should perform the test/inspections and corrective actions in the order listed.

b. This manual cannot list all malfunctions that may occur, nor all test or inspections and corrective actions. If a malfunction is not listed or is not corrected by listed corrective actions, notify your supervisor.

Table 2-2. TROUBLESHOOTING

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
1. FLIP-TOP PLATEMAKER DOES NOT ENERGIZE.	Step 1. Check that lower cabinet door is closed tightly. (a) If door tightly closed, proceed to step 2. (b) Close lower cabinet door tightly.	
	Step 2. Check that master circuit breaker in platemaker not tripped. (a) If circuit breaker not tripped, proceed to step 3. (b) Reset circuit breaker.	
	Step 3. Check position of power panel circuit breaker. (a) Reset circuit breaker. (b) If circuit breaker is on, refer to organizational maintenance.	

Table 2-2. TROUBLESHOOTING - Cont

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
2. EXPOSURE LAMP DOES NOT OPERATE IN MANUAL OR AUTOMATIC OPERATIONS.	Step 1. Check that glass frame is properly locked in its horizontal position.	(a) If glass frame properly locked in place, proceed to step 2. (b) Properly lock glass frame in place.
	Step 2. Check for defective exposure lamp.	(a) Replace exposure lamp (paragraph 2-10.1). (b) If problem remains, refer to organizational maintenance.
3. HALATION OCCURS: APPEARS AS DOT SPREADING; COPY ENLARGED AT EDGES; SHADOWS ON TYPE.	Step 1. Check for overexposure which may accent poorly stripped areas.	(a) If exposure correct proceed to step 2. (b) Adjust for proper exposure.
	Step 2. Check for yellowed or defective sensitivity guide.	(a) If guide is not defective, proceed to step 3. (b) Replace sensitivity guide.
	Step 3. Check flat for proper stripping.	(a) If flat properly prepared, proceed to step 4. (b) Have flat properly stripped.
	Step 4. Check vacuum level used.	(a) If vacuum correct, proceed to step 5. (b) Repeat procedure using proper vacuum.

Table 2-2. TROUBLESHOOTING - Cont

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
3. HALATION OCCURS: APPEARS AS DOT SPREADING; COPY ENLARGED AT EDGES; SHADOWS ON TYPE - Cent	Step 5. Check that the proper units of lights were entered.	(a) If light units were entered correctly, proceed to step 6. (b) Enter correct units of light.
	Step 6. Adjust photodetector assembly (paragraph 2-10.2).	If problem persists, notify your supervisor.
4. BROKEN IMAGES.	Step 1. Check stripped flat for tape or opaquing solution covering portion of image that is broken.	(a) If stripped flat is correctly prepared, proceed to step 2. (b) Correctly prepare flat.
	Step 2. Check that glass frame is clean.	(a) If glass frame is clean, proceed to step 3. (b) Clean glass frame.
	Step 3. Check exposure with sensitivity guide.	(a) If exposure correct, problem may be due to flat being dirty. Clean flat. (b) Reset exposure controls.

2-10. MAINTENANCE PROCEDURES.

This section contains instructions covering operator maintenance functions for the flip-top platemaker. Personnel required are listed only if the task requires more than one.

b. After completing each maintenance procedure, perform operational check to be sure that equipment is properly functioning.

I N D E X

PROCEDURE	PARAGRAPH
Replace Exposure Lamp . . . . .	2-10.1
Adjust Photodetector Assembly . . . . .	2-10.2

2-10.1 Replace Exposure Lamp.

MOS: 83E, Photo and Layout Specialist

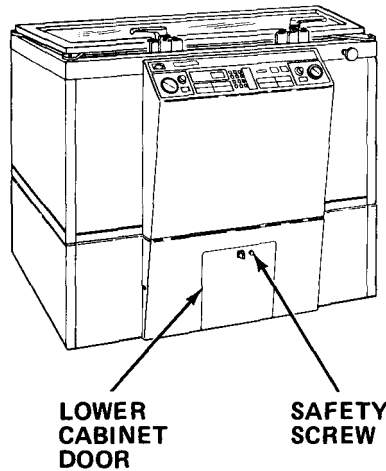
TOOLS: Flat Tip Screwdriver

SUPPLIES: Exposure Lamp

**WARNING**

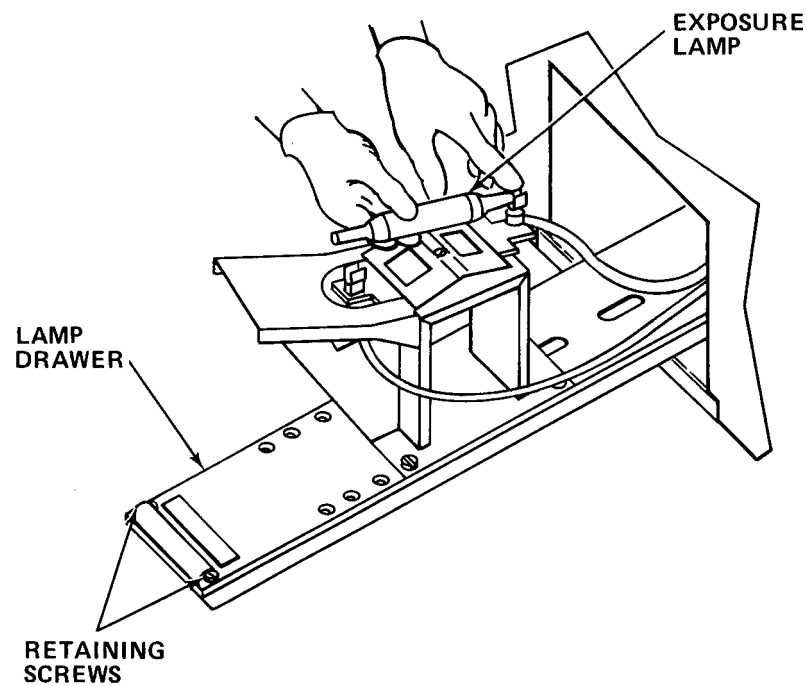
Death or serious injury may occur from electrical shock unless power is turned off before servicing.

a. Turn off power panel circuit breaker.



b. Remove screw and open lower cabinet door.





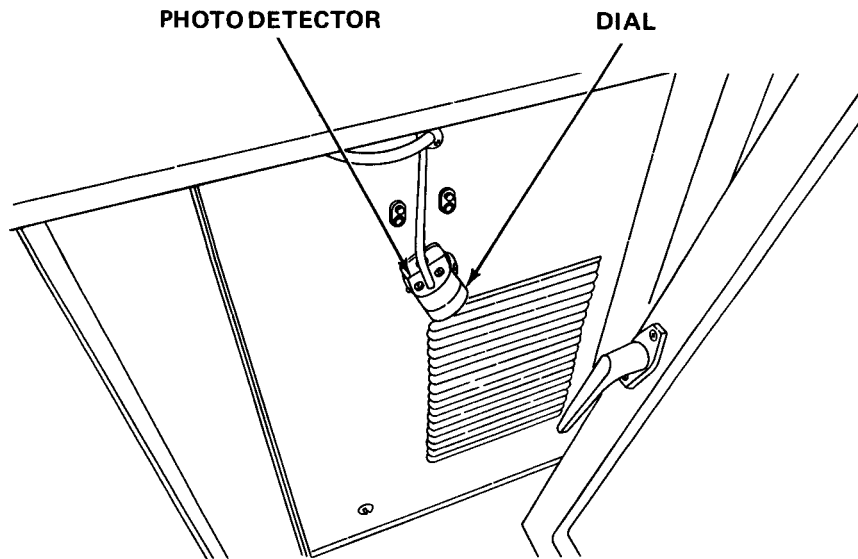
- c. Remove two screws holding lamp drawer.
- d. Pull drawer out as far as it will go.
- e. Remove defective exposure lamp from fuse clips.
- f. Using white gloves, install new exposure lamp into fuse clips.
- g. Slide lamp drawer back into cabinet.
- h. Install two holddown screws for lamp drawer.
- i. Close lower cabinet door and retain with safety screw.
- j. Turn on power panel circuit breaker.

2-10.2 Adjust Photodetector Assembly.

MOS: 83E, Photo and Layout Specialist

TOOLS: Flat Tip Screwdriver

- a. Pull out frame release knob and flip glass frame into vertical position.



- b. Loosen center screw and turn dial to next highest digit to increase time value of one unit of light. Turn dial to next lowest digit to decrease time value of one unit of light.
- c. Retighten screw and run test exposure.
- d. If necessary, repeat procedure until proper adjustment is obtained.

Section IV. ORGANIZATIONAL MAINTENANCE

2-11. LUBRICATION INSTRUCTIONS. This equipment does not require lubrication.

2-12. REPAIR PARTS. SPECIAL TOOLS: TEST, MEASUREMENT, AND DIAGNOSTIC EQUIPMENT (TMDE); AND SUPPORT-EQUIPMENT.

2-12.1 Common Tools and Equipment. For authorized common tools and equipment, refer to the Modified Table of Organization and Equipment (MTOE) applicable to your unit.

2-12.2 Special Tools: Test, Measurement, and Diagnostic Equipment; and Support Equipment. Special Tools, TMDE, and Support Equipment is listed in the applicable repair parts and special tools list and in appendix B of this manual.

2-12.3 Repair Parts. Repair parts are listed and illustrated in the Repair Parts and Special Tools List, TM 5-3610-285-24P covering organizational maintenance for this equipment.

2-13. SERVICE UPON RECEIPT.

2-13.1 Checking Unpacked Equipment.

Inspect the equipment for damage incurred during shipment. **If** equipment has been damaged, report the damage on DD form 6, Packing Improvement Report.

b. Check the equipment against the packing list to see if the shipment is complete. Report all discrepancies in accordance with the instructions of DA Pam 738-750.

c. Check to see whether the equipment has been modified.

2-14. ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES.

PMCS are designed to keep the equipment in good working condition by performing certain tests, inspections, and services. The intervals provide you, the organizational technician, with time schedules that determine when to perform specified tasks.

b. Item number column. Item numbers are assigned in chronological ascending sequence regardless of interval designation. These numbers are used for your "TM Number" column on DA Form 2404, Equipment Inspection and Maintenance Worksheet, in recording the results of PMCS.

Interval column. This column determines the time period designated to perform your PMCS.

d. Item to be inspected and procedures column. This column lists functional groups and their respective assemblies and subassemblies as shown in the Maintenance Allocation Chart (Appendix B). The appropriate check or service procedure follows the specific item to be inspected.

e. List of tools and materials required for PMCS is as follows:

<u>Item</u>	<u>Quantity</u>
Flat Tip Screwdriver	1
1/2 in. Drive Socket Set	1
Hex Head Key Wrench Set	1
Nonflammable Flushing Solvent (Item 59, Appendix E) ar	
Vacuum Pump Filters	4

Table 2-3. ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES

B - Before  
D - During  
A - After

W - Weekly  
M - Monthly  
Q - Quarterly

AN - Annually  
S - Semiannually  
BI - Biennially

(Number) - Hundreds of Hours

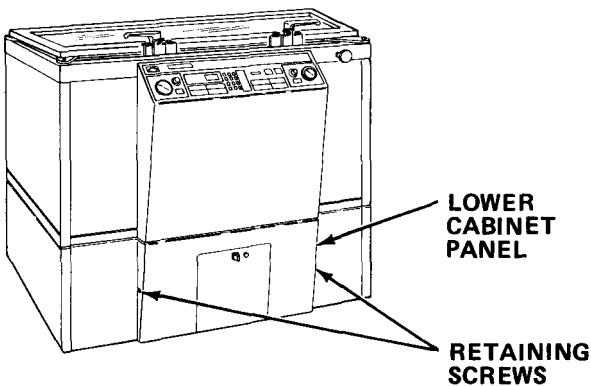
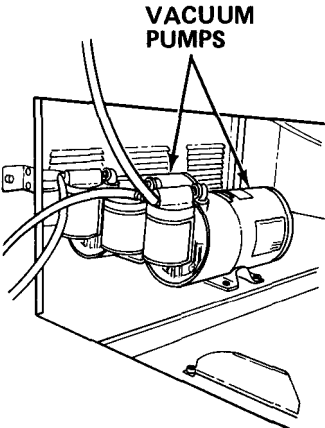
ITEM NO.	INTERVAL	ITEM TO BE INSPECTED  PROCEDURE
1	M	<p><u>FLIP-TOP PLATEMAKER</u></p> <p><u>Inspect and Service Vacuum Pump Filters.</u></p> <p style="text-align: center;"><b>WARNING</b></p> <p>Death or serious injury may occur from electrical shock unless power is turned off before servicing.</p> <p>1. Turn off power panel circuit breaker.</p> <div style="text-align: center;">  <p style="text-align: right;">LOWER CABINET PANEL</p> <p style="text-align: right;">RETAINING SCREWS</p> </div> <p>2. Remove two screws and lower cabinet panel.</p> <div style="text-align: center;">  <p style="text-align: center;"><b>VACUUM PUMPS</b></p> </div> <p>3. Remove intake and exhaust glass jars from both pumps.</p>

Table 2-3. ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES - Cont

B - Before                      W - Weekly                      AN - Annually                      (Number)- Hundreds of Hours  
 D - During                      M - Monthly                      S - Semiannually  
 A - After                      Q - Quarterly                      BI - Biennially

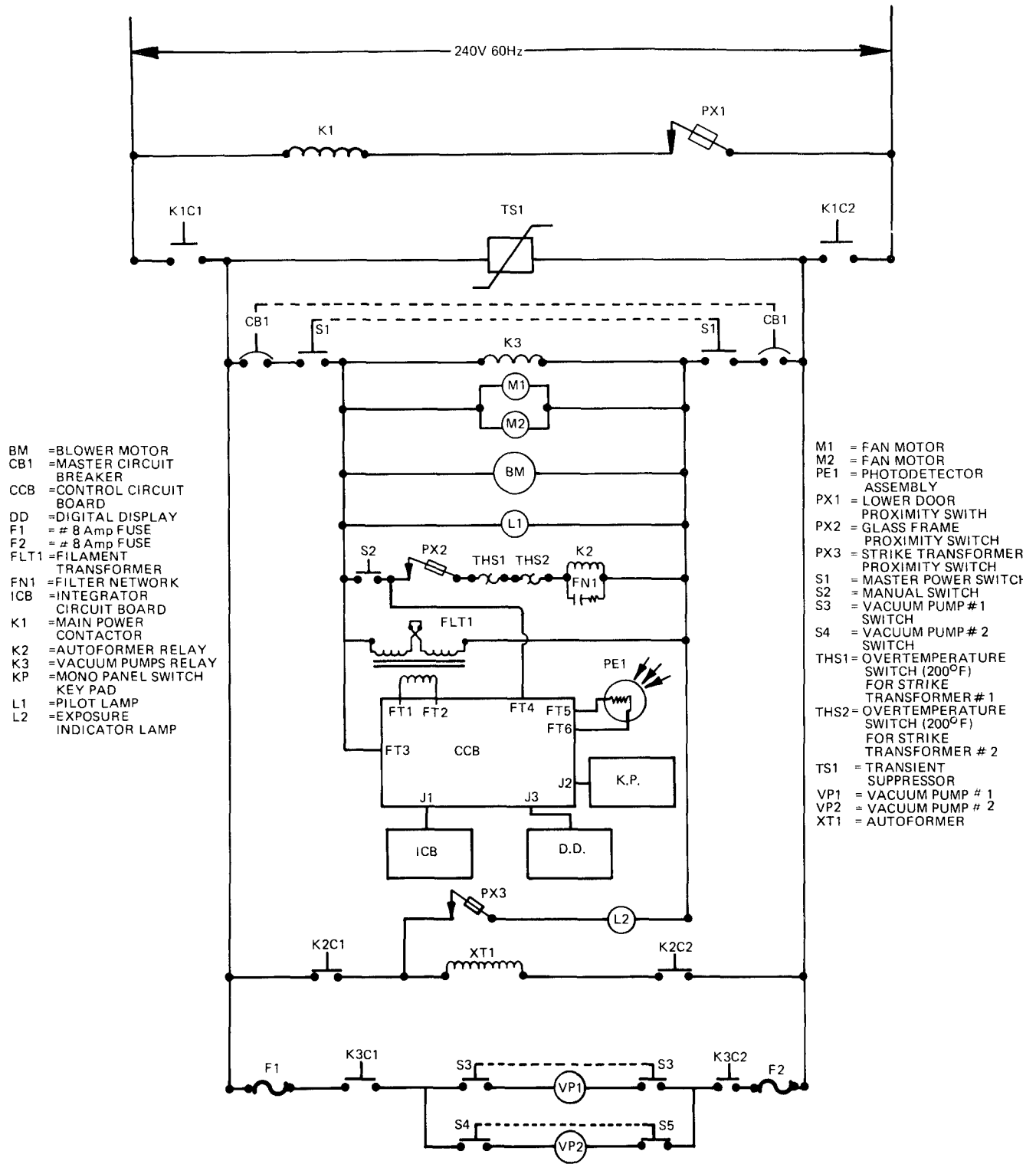
ITEM NO.	INTERVAL	ITEM TO BE INSPECTED  PROCEDURE
1	M	<p><u>FLIP-TOP PLATEMAKER - Cent</u></p> <p><u>Inspect and Service Vacuum Pump Filters - Cont</u></p> <div style="text-align: center;"> </div> <ol style="list-style-type: none"> <li>4. Carefully remove intake filter assembly from both pumps.</li> <li>5. Remove cap plug and end plate on bottom of filter assemblies and remove two felt filters from each assembly.</li> <li>6. Remove plastic nut; then carefully remove exhaust filter assemblies and two felt filters from each assembly.</li> <li>7. Clean felt filters using nonflammable flushing solvent. Replace if necessary.</li> <li>8. Reinstall exhaust felt filters onto shafts and install shafts back onto vacuum pumps. Use care not to overtighten plastic nuts.</li> <li>9. Reinstall intake felt filters onto shafts; then install end plates and cap plugs.</li> <li>10. Reinstall intake and exhaust glass jars on both vacuum pumps.</li> <li>11. Reinstall lower cabinet panel.</li> </ol>

**2-15. ORGANIZATIONAL TROUBLESHOOTING PROCEDURES.**

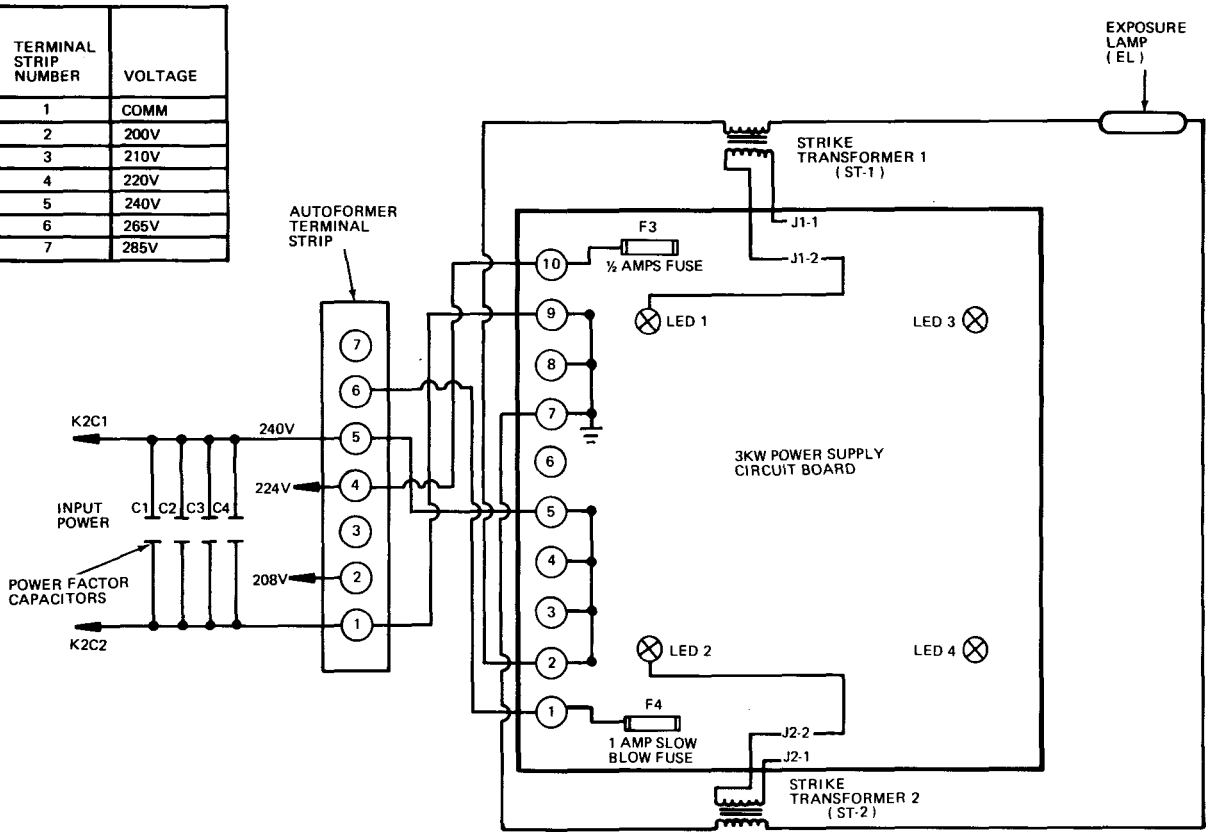
a. Organizational troubleshooting procedures cover the most common malfunctions that may be repaired at the organizational level. Repair or adjustment requiring specialized equipment is not authorized unless such equipment is available. Troubleshooting procedures used by the operator should be conducted in addition to the organizational troubleshooting procedures.

b. This manual cannot list all the possible malfunctions or every possible test/inspection and corrective action. If a malfunction is not listed or is not corrected by a listed corrective action, notify your supervisor.

c. For unidentified malfunctions, use the facing schematic or foldouts located at the end of this manual for further fault analysis.



TERMINAL STRIP NUMBER	VOLTAGE
1	COMM
2	200V
3	210V
4	220V
5	240V
6	265V
7	285V



- LED 1 : LIT WHEN STRIKE PULSES ARE GENERATED FOR ST 1.
- LED 2 : LIT WHEN STRIKE PULSES ARE GENERATED FOR ST 2.
- LED 3 : OFF IF INPUT VOLTAGE IS TOO HIGH
- LED 4 : OFF IF INPUT VOLTAGE IS TOO LOW.



Table 2-4. ORGANIZATIONAL TROUBLESHOOTING

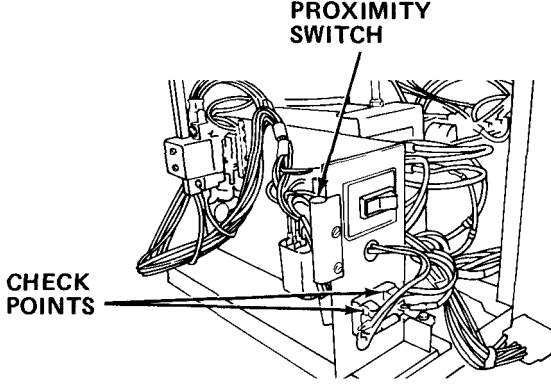
MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
1. FLIP-TOP PLATEMAKER DOES NOT ENERGIZE.	<p>Step 1. Check for 220 V ac input to flip-top platemaker at utility outlet box .</p> <p>(a) <b>If</b> voltage is present, proceed to step 2.</p> <p>(b) <b>If</b> no voltage is present, proceed to organizational troubleshooting in chapter 1.</p> <p>Step 2. Check for 220 V ac between fuses <b>F1</b> and <b>F2</b> on relay panel.</p>	<p style="text-align: center;"><b>NOTE</b></p> <p>It will be necessary to override lower cabinet door proximity switch before voltage readings can be obtained. Remove magnet from door, and place it on switch.</p>
		<p>(a) <b>If</b> voltage is present, proceed to step 3.</p> <p>(b) <b>If</b> voltage is not present, proceed to step 4.</p> <p>Step 3. Check output of master circuit breaker in platemaker.</p> <p>(a) <b>If</b> voltage is present, replace master power switch (paragraph 2-16.12)</p> <p>(b) <b>If</b> voltage is not present, replace master circuit breaker (paragraph 2-16.16).</p>

Table 2-4. ORGANIZATIONAL TROUBLESHOOTING - Cont

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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1. FLIP-TOP PLATEMAKER DOES **NOT ENERGIZE** -Cont

Step 4. Check operation of lower door proximity switch as follows:

- (a) Turn off power panel circuit breaker.
- (b) Tag and disconnect proximity switch wires from quick-disconnects.
- (c) Connect multimeter to proximity switch wires.
- (d) Activate proximity switch with magnet and check continuity with multimeter.
  - (1) If meter reading is zero ohms resistance, replace main power contactor **(K1)** (paragraph 2-16.4).
  - (2) If no continuity is present, replace proximity switch **(PX1)** (paragraph 2-16.18).

**NOTE**

Replace magnet on door with two socket head screws.

2. BLOWER MOTOR DOES NOT OPERATE.

Check that blower motor power cord is plugged in.

- (a) **If** plugged in, replace blower motor (paragraph 2-16.2).
- (b) Plug in power **cord**.

3. POWER SUPPLY **COOLING** FAN(S) DO NOT OPERATE.

Replace fan motor assembly (paragraph 2-16.6).

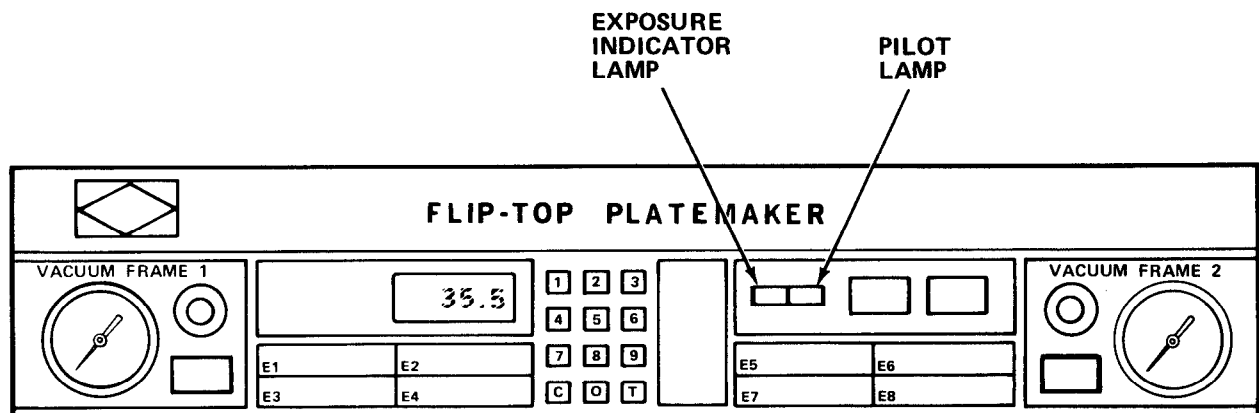
Table 2-4. ORGANIZATIONAL TROUBLESHOOTING - Cont

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

## 3. POWER SUPPLY COOLING FAN(S) DO NOT OPERATE - Cont



## 4. POWER ON PILOT LAMP DOES NOT OPERATE.

Replace pilot/exposure indicator lamp (paragraph 2-16.13).

## 5. NEITHER VACUUM PUMP OPERATES.

Check for defective fuse F1 or F2.

(a) If fuses are good, replace vacuum pumps relay (K3) (paragraph 2-16.17).

(b) If fuse is defective, replace fuse.

## 6. ONLY ONE VACUUM PUMP OPERATES.

Remove control panel (paragraph 2-16.10), and check continuity of vacuum pump switch for inoperative pump.

(a) If continuity present, replace vacuum pump (paragraph 2-16.5).

(b) If continuity not present, replace vacuum pump switch (paragraph 2-16.12).

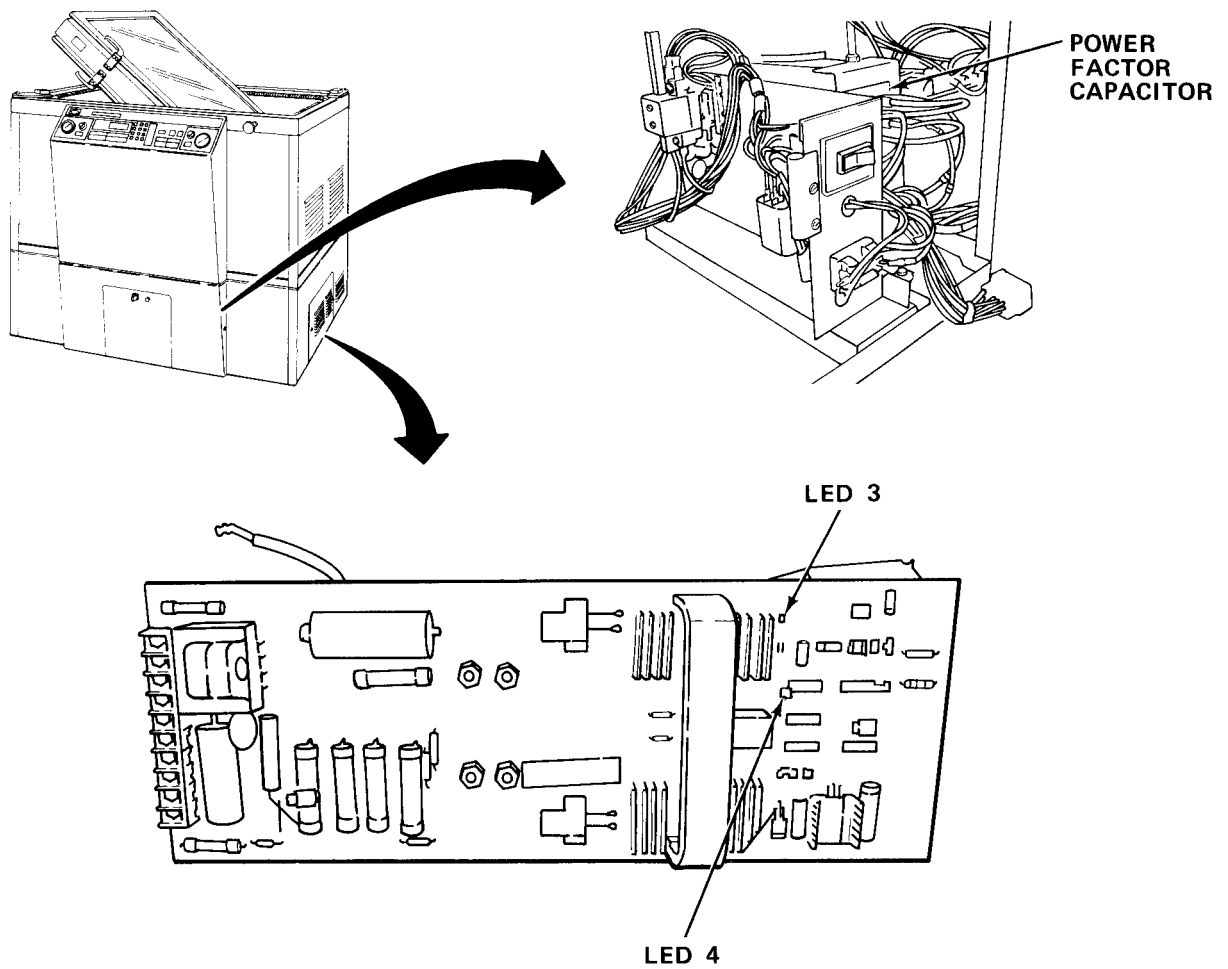
**Table 2-4. ORGANIZATIONAL TROUBLESHOOTING - Cont**

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
7. EXPOSURE LAMP OPERATES IN AUTOMATIC MODE BUT DOES NOT OPERATE IN MANUAL MODE.		Replace manual switch (S2) (paragraph 2-16.12).
8. EXPOSURE LAMP OPERATES IN MANUAL MODE BUT NOT IN AUTOMATIC MODE.		<p>Step 1. Check for 12 V ac output of filament transformer (FLT-1) as follows:</p> <ul style="list-style-type: none"> <li>(a) Turn off power panel circuit breaker.</li> <li>(b) Remove two mounting screws for control panel from inside unit.</li> <li>(c) Carefully lift control panel off lip and position so that access to control circuit board is obtained.</li> <li>(d) Connect multimeter to connectors FT1 and FT2.</li> <li>(e) Turn on power panel circuit breaker.</li> <li>(f) Press master power switch and observe voltage reading on multimeter. <ul style="list-style-type: none"> <li>(1) If 12 V ac is present, refer to direct/general support maintenance.</li> <li>(2) If 12 V ac is missing, replace filament transformer (FLT-1) (paragraph 2-16.15).</li> </ul> </li> </ul>

Table 2-4. ORGANIZATIONAL TROUBLESHOOTING - Cont

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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9. EXPOSURE LAMP DOES NOT OPERATE IN ANY MODE.



Step 1. Check LEDs 3 and 4 on 3kW power supply board as follows:

- (a) Turn off power panel circuit breaker.
- (b) Remove two screws and right side louvered panel.
- (c) Position panel so that fans can operate when power is applied.
- (d) Turn on power panel circuit breaker.

Table 2-4. ORGANIZATIONAL TROUBLESHOOTING - Cont

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
-------------	--------------------	-------------------

- (e) Press master power switch on.
- (f) Press manual exposure switch on, and observe LEDs 3 and 4 on 3kW power supply board.
  - (1) If either or both LEDs are lit, refer to direct/general support maintenance.
  - (2) If both LEDs are off, proceed to step 2.

**WARNING**

You must stand on rubber matting before performing this procedure. Death or serious injury may occur.

Step 2. **Check** for 220 V ac across power factor capacitors as follows:

- (a) Turn off power panel circuit breaker.
- (b) Remove two screws and lower cabinet panel.
- (c) Place magnet on lower cabinet door to activate proximity
- (d) Connect multimeter leads across two wires on any one capacitor.

**WARNING**

Electrical shock hazard. You must stand on rubber matting as a protective measure before performing this procedure.

- (e) Turn on power panel circuit breaker.
- (f) Press master power switch on.
- (9) Press manual exposure switch on and observe voltage reading on

Table 2-4. ORGANIZATIONAL TROUBLESHOOTING - Cont

## MALFUNCTION

## TEST OR INSPECTION

## CORRECTIVE ACTION

## 9. EXPOSURE LAMP DOES NOT OPERATE IN ANY MODE - Cont

(1) If voltage correct, proceed to step 3.

(2) If voltage missing, proceed to step 4.

Step 3. Check fuses F3 and F4 on 3kW power supply circuit board.

(a) If fuses are good, replace autoformer (paragraph 2-16.20).

(b) Replace defective fuse(s).

Step 4. Check continuity of glass frame proximity switch (PX2) as follows:

(a) Remove two mounting screws for control panel.

(b) Carefully lift control panel from lip to gain access to terminal board on chassis.

(c) Disconnect one of two wires going to control panel from terminal board.

(d) With glass frame locked in horizontal position, check continuity across two terminals.

(e) Reconnect wire.

(1) If continuity present, proceed to step 5.

(2) If continuity not present, replace glass frame proximity switch (PX2) (paragraph 2-16.1).

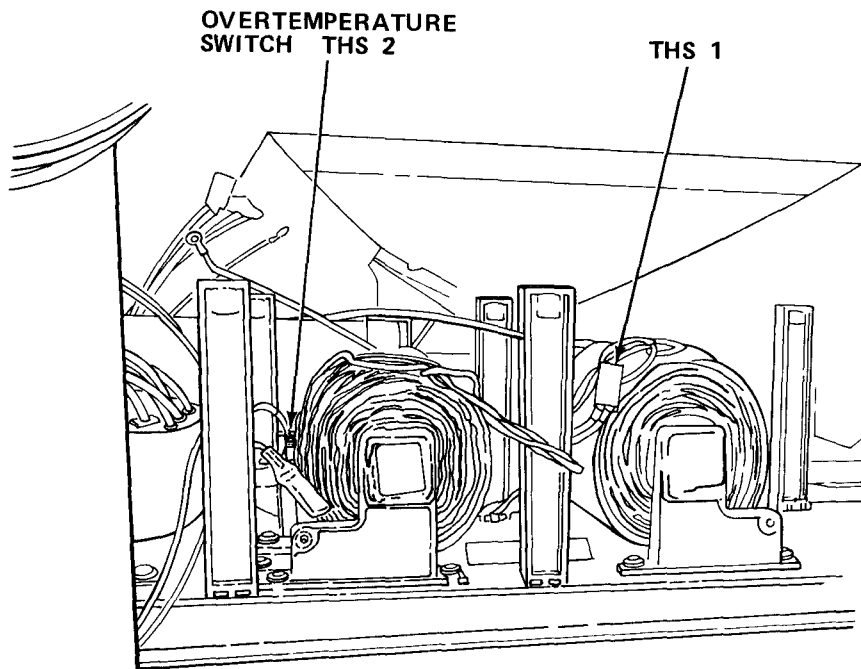
Table 2-4. ORGANIZATIONAL TROUBLESHOOTING - Cont

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

9. EXPOSURE LAMP DOES NOT OPERATE **IN** ANY MODE - Cont



Step 5. Check overtemperature switches (THS1 and THS2) as follows:

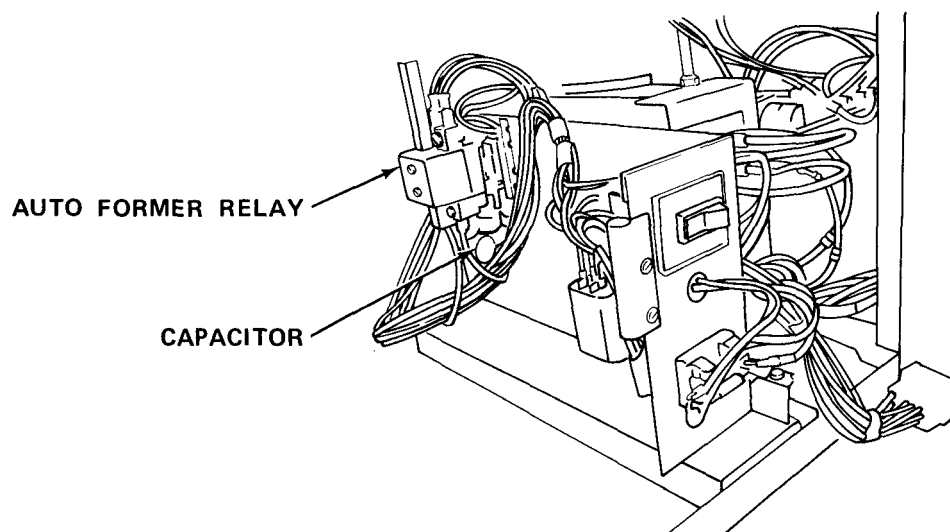
- (a) Connect one meter lead to one of two terminals on terminal block behind control panel.



Table 2-4. ORGANIZATIONAL TROUBLESHOOTING - Cont

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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## 9. EXPOSURE LAMP DOES NOT OPERATE IN ANY MODE - Cont



- (b) Connect other meter lead to wire on rear of capacitor (wire number 5) on the autoformer relay (K2) and check for continuity.
  - (1) If continuity is present, replace autoformer relay (K2) (paragraph 2-16.19).
  - (2) If continuity is not present, refer to direct/general support maintenance for replacement of overtemperature switch.

## 10. VACUUM PUMP DOES NOT BUILD UP CORRECT VACUUM.

Step 1. Check all vacuum hoses and connections for air leaks.

- (a) If no air leaks are found, proceed to step 2.
- (b) Correct cause of air leak.

**Table 2-4. ORGANIZATIONAL TROUBLESHOOTING - Cont**

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<b>10. VACUUM PUMP DOES NOT BUILD UP CORRECT VACUUM - Cont</b>		
	Step 2. Check for air leak around vacuum frame.	(a) If no leaks are found, proceed to step 3. (b) If leaks are around vacuum frame, adjust left- and right-hand latches to lock glass frame more tightly. <b>(c) If latches</b> cannot be adjusted enough, replace vacuum blanket assembly (paragraph 2-16.7).
	Step 3. Check for defective vacuum bleed valve.	(a) <b>If</b> vacuum bleed valve is good, proceed to step 4. (b) <b>If</b> defective, replace vacuum bleed valve (paragraph 2-16.14).
	Step 4. Check for defective vacuum gage.	(a) <b>If</b> defective, replace vacuum gage (paragraph 2-16.11). (b) <b>If</b> vacuum gage is good, flush vacuum pump (paragraph 2-16.21). (c) If problem remains, replace vacuum pump (paragraph 2-16.5).

**2-16. MAINTENANCE PROCEDURES.**

a. This section contains instructions covering organizational maintenance functions for the flip-top platemaker. Personnel required are listed only if the task requires more than one.

b. After completing each maintenance procedure, perform operational check to be sure that equipment is properly functioning.

INDEX

PROCEDURES	PARAGRAPH
Replace Glass Frame Proximity Switch (PX2) . . . . .	2-16.1
Replace Blower Motor . . . . .	2-16.2

INDEX - Cont

PROCEDURES	PARAGRAPH
Replace Power Factor Capacitors . . . . .	2-16.3
Replace Main Power Contactor (K1) . . . . .	2-16.4
Replace Vacuum Pump(s) . . . . .	2-16.5
Replace Fan Motor Assembly (s) . . . . .	2-16.6
Replace Vacuum Blanket Assembly(s) . . . . .	2-16.7
Replace Lift Arm(s) . . . . .	2-16.8
Replace Glass Frame Glass . . . . .	2-16.9
Remove/ Install Control Panel . . . . .	2-16.10
Replace Vacuum Gage . . . . .	2-16.11
Replace Power Switch (es) . . . . .	2-16.12
Replace Pilot/Exposure Indicator Lamps . . . . .	2-16.13
Replace Vacuum Bleed Valve . . . . .	2-16.14
Replace Filament Transformer (FLT-1) . . . . .	2-16.15
Replace Master Circuit Breaker (CB1) . . . . .	2-16.16
Replace Vacuum Pumps Relay (K3) . . . . .	2-16.17
Replace Lower Cabinet Door Proximity Switch (PX1) . . . . .	2-16.18
Replace Autoformer Relay (K2) . . . . .	2-16.19
Replace Autoformer (XT1) . . . . .	2-16.20
Flush Vacuum Pump(s) . . . . .	2-16.21
Replace Photodetector Assembly . . . . .	2-16.22

2-16.1 Replace Glass Frame Proximity Switch (PX2)

MOS: 83FJ6, Reproduction Equipment Repairer

TOOLS:

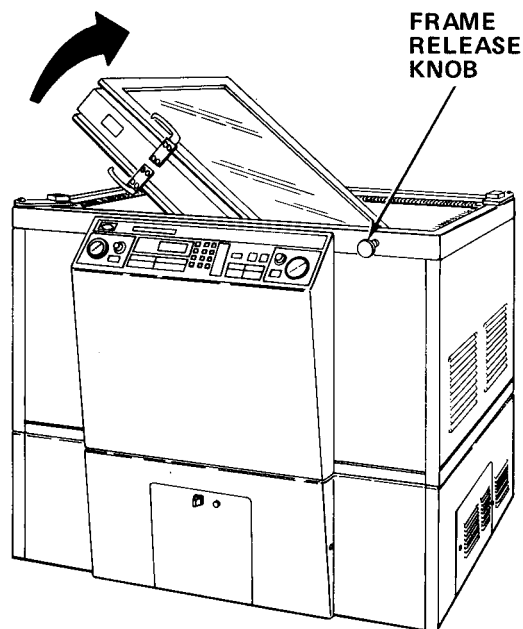
Tool Kit, Light Machine Repair  
Flat Tip Screwdriver  
Hex Head Key Wrench Set  
Slip Joint Pliers

SUPPLIES: Proximity Switch

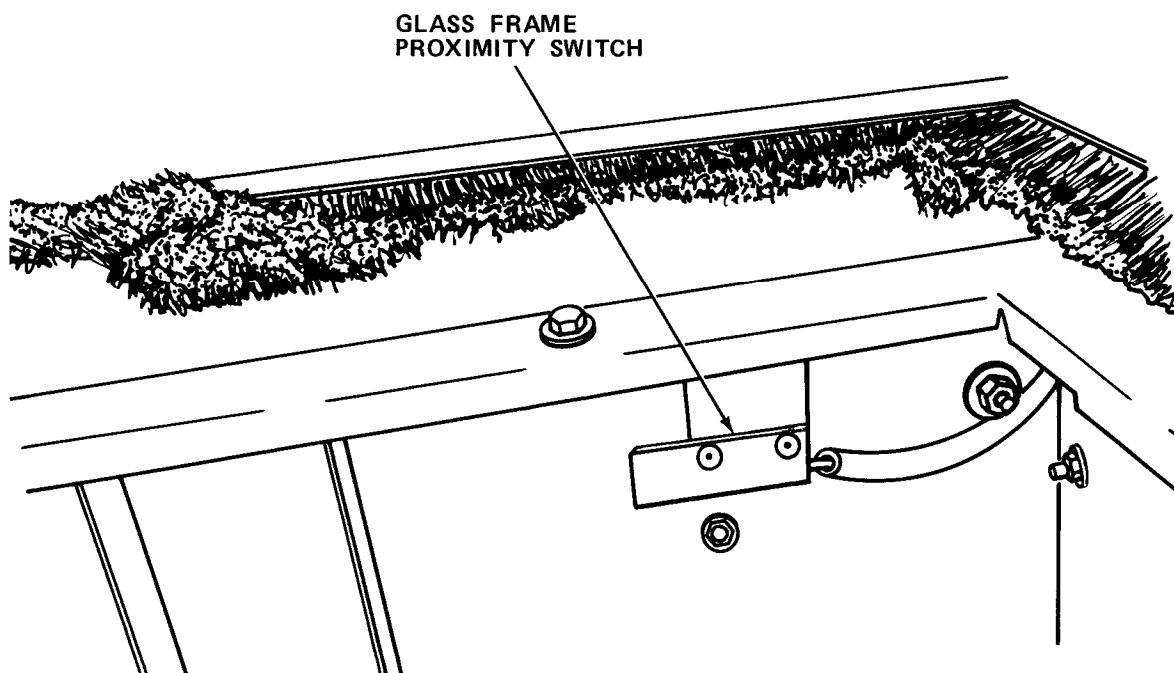
WARNING

Death or serious injury may occur from electrical shock unless power is turned off before servicing.

- a. Turn off power panel circuit breaker.



- b. Pull out on frame release knob and flip glass frame into a vertical position.



- c. Remove mounting screws for control panel.
- d. Carefully lift the control panel from its mount.
- e. Tag and disconnect wires for proximity switch at the terminal block behind the control panel.
- f. Remove mounting screws and defective proximity switch. From the proximity switch, pull wiring through the platemaker frame.
- g. Install new proximity switch with wiring, and thread wiring through the frame, to the terminal block behind the control panel.
- h. Reconnect wires for proximity switch at the terminal block.
- i. Replace control panel on its mount, and secure with mounting screws.
- j. Rotate glass frame into horizontal position and lock into place with frame release knob.
- k. Turn on power panel circuit breaker.

2-16.2 Replace Blower Motor.

MOS: 83FJ6, Reproduction Equipment Repairer

TOOLS :

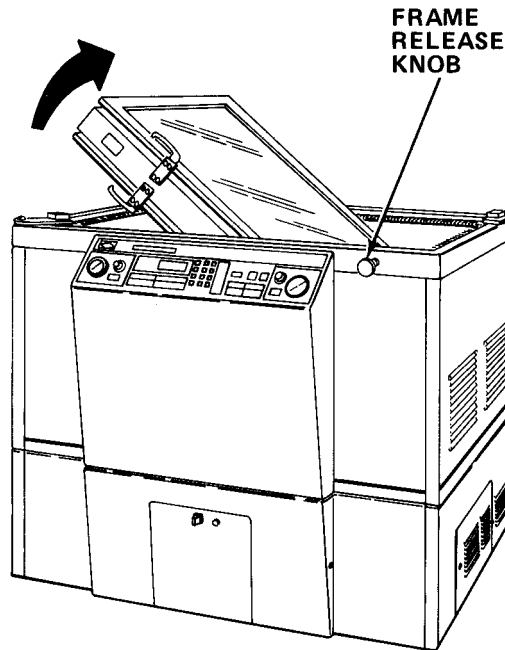
Tool Kit, Light Machine Repair  
Flat Tip Screwdriver  
Combination Wrench Set

SUPPLIES: Blower Motor

WARNING

Death or serious injury may occur from electrical **shock** unless power is turned off before servicing.

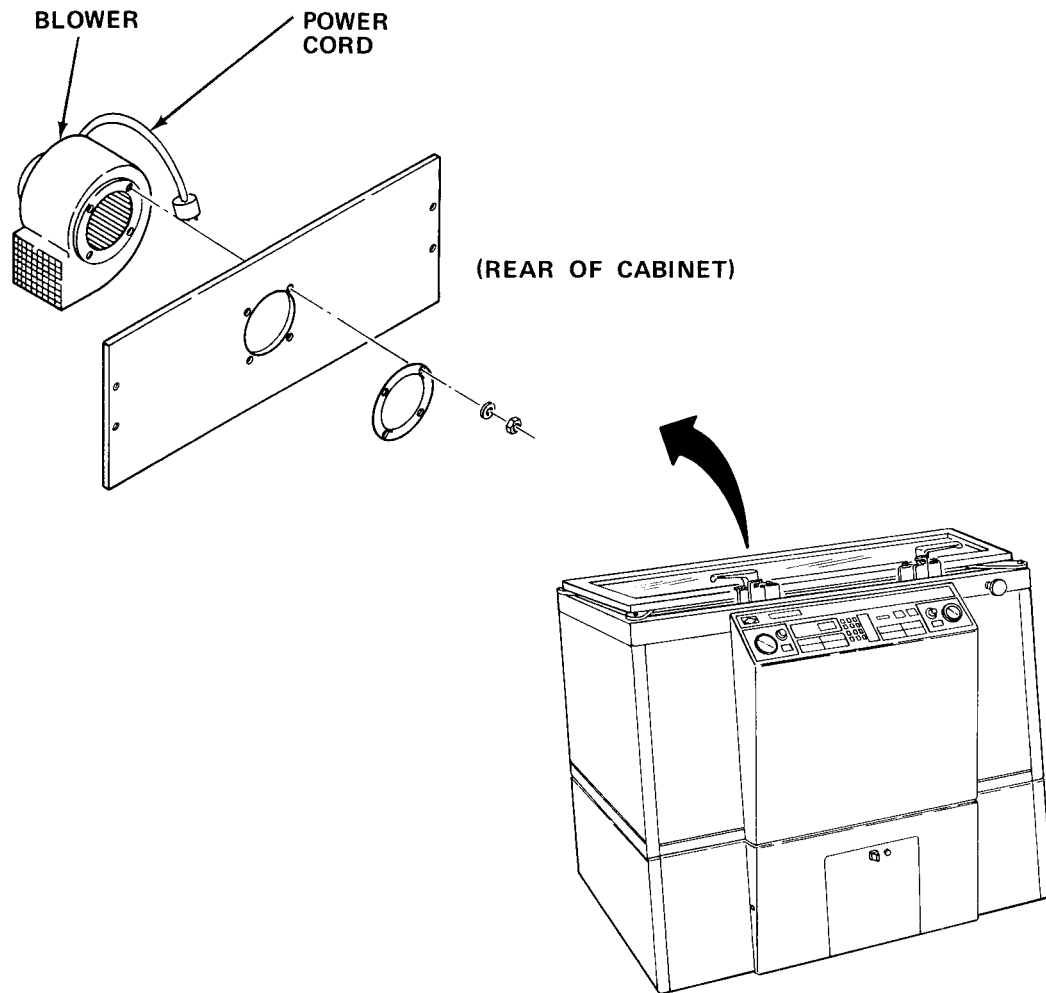
- a. Turn off power panel circuit breaker.



- b. Pull out frame release knob and flip glass frame into vertical position.

CAUTION

When working inside platemaker, ensure that no tools or heavy objects strike the glass light shield.



- c. Unplug power cord for blower motor.
- d. Remove four mounting nuts and defective blower motor.
- e. Install new blower motor onto frame and attach with four nuts.
- f. Plug in power cord for blower motor.
- g. Rotate glass frame into horizontal position and lock into place with frame release knob.
- h. Turn on power panel circuit breaker.

2-16.3 Replace Power Factor Capacitor(s).

MOS: 83FJ6, Reproduction Equipment Repairer

TOOLS:

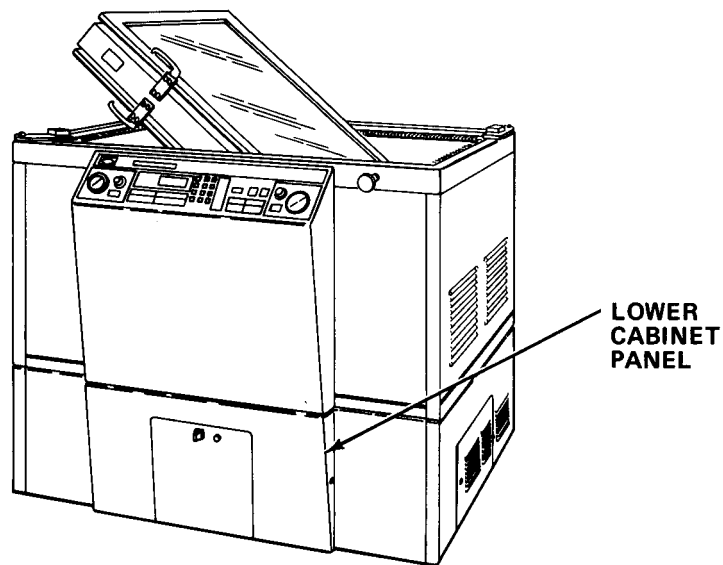
Tool Kit, Light Machine Repair  
Combination Wrench Set  
Hex Head Key Wrench Set  
Flat Tip Screwdriver

SUPPLIES: 47 $\mu$ F Capacitor 440V (ar)

**WARNING**

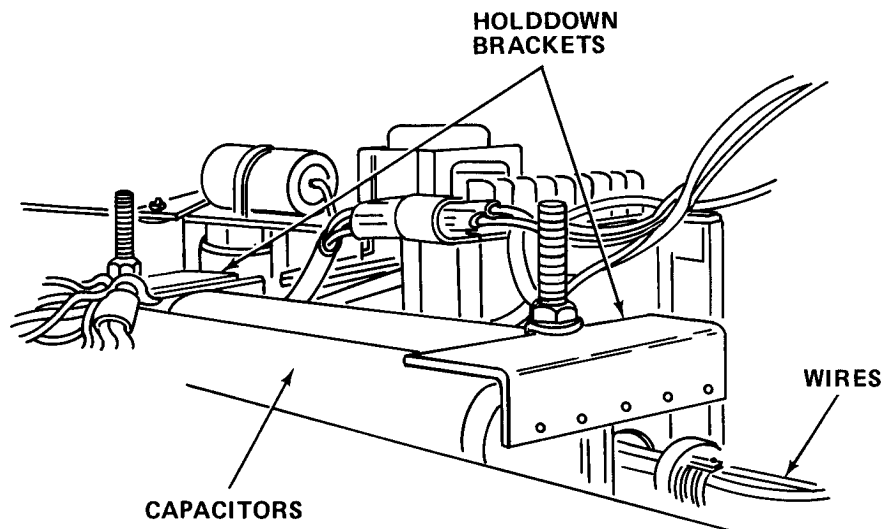
Death or serious injury may occur from electrical shock unless power is turned off before servicing.

- a. Turn off power panel circuit breaker.



- b. Remove two screws and lower cabinet panel.





**WARNING**

Voltag es that are capable of causing death may be stored in capacitors after power is removed. Ground and discharge capacitors to zero volts before disconnecting capacitor leads. Personal injury or death may occur from failure to do so.

- c. Tag and disconnect wires from capacitors. Capacitor bottom connector is the negative connector.
- d. Remove nuts and washers from studs for holddown brackets that hold top two capacitors.

**NOTE**

If one of the top two capacitors is being replaced, proceed to step f.

- e. Remove nuts and washers from studs for holddown brackets that hold bottom two capacitors.
- f. Remove defective capacitor from housing.

**NOTE**

If one of the top two capacitors were replaced, proceed to step h.

- g. Install new capacitor into housing and reinstall holddown brackets for capacitors.
- h. Install new capacitors into housing and reinstall holddown brackets for top capacitors.
- i. Reconnect wires to capacitors.
- j. Reinstall lower cabinet panel.
- k. Turn on power panel circuit breaker.

2-16.4 Replace Main Power Contactor (K1).

MOS: 83FJ6, Reproduction Equipment Repairer

TOOLS:

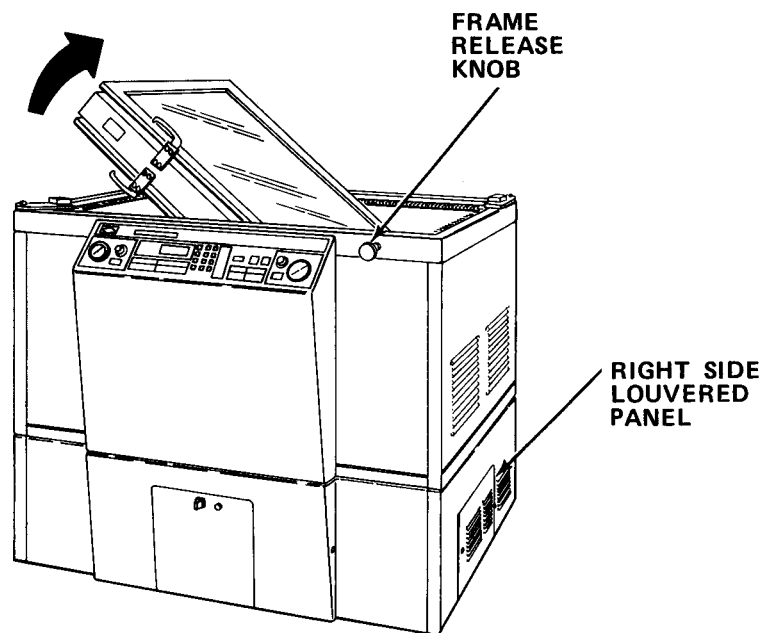
Tool Kit, Light Machine Repair  
Flat Tip Screwdriver  
Hex Head Key Wrench Set  
Slip Joint Pliers

SUPPLIES: Contactor 25A 230 V ac, 50/60 Hz

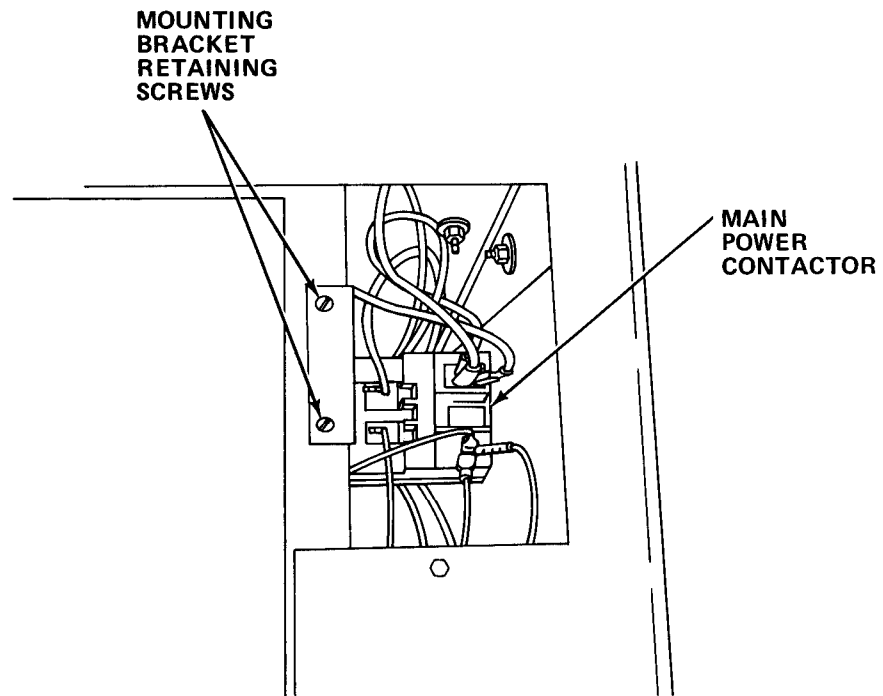
**WARNING**

Death or serious injury may occur from electrical shock unless power is turned off before servicing.

- a. Turn off power panel circuit breaker.



- b. Pull out frame release knob and flip glass frame into vertical position.



- c. Remove main power contactor cover.
- d. Tag and disconnect wires from main power contactor.
- e. Remove two screws on bracket and remove bracket with contactor attached.
- f. Remove insulator and defective main power contactor from mounting bracket.
- g. Install new main power contactor and insulator onto mounting bracket.
- h. Reinstall contactor and mounting bracket into housing.
- i. Reconnect wire to new contactor.
- j. Reinstall main power contactor cover.
- k. Rotate glass frame into horizontal position and lock into place with frame release knob.
- l. Turn on power panel circuit breaker.

2-16.5 Replace Vacuum Pump(s).

MOS: 83FJ6, Reproduction Equipment Repairer

TOOLS:

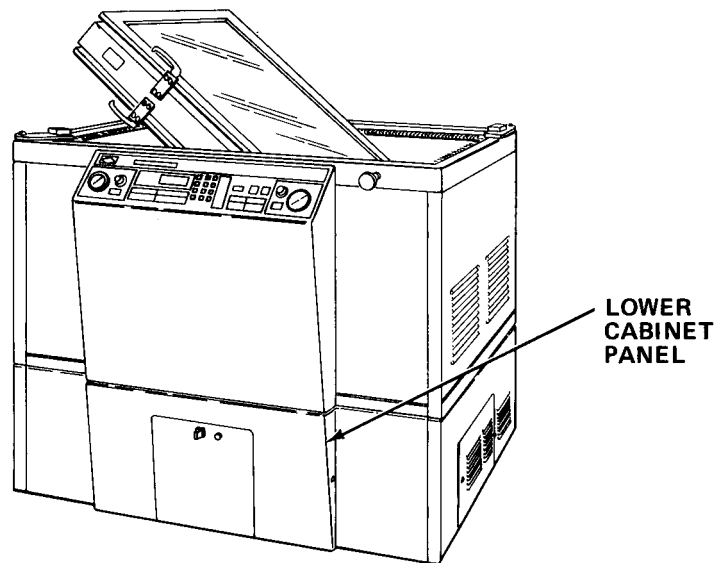
Tool Kit, Light Machine Repair  
Combination Wrench Set  
Hex Head Key Wrench Set  
Flat Tip Screwdriver

SUPPLIES: Vacuum Pump(s)

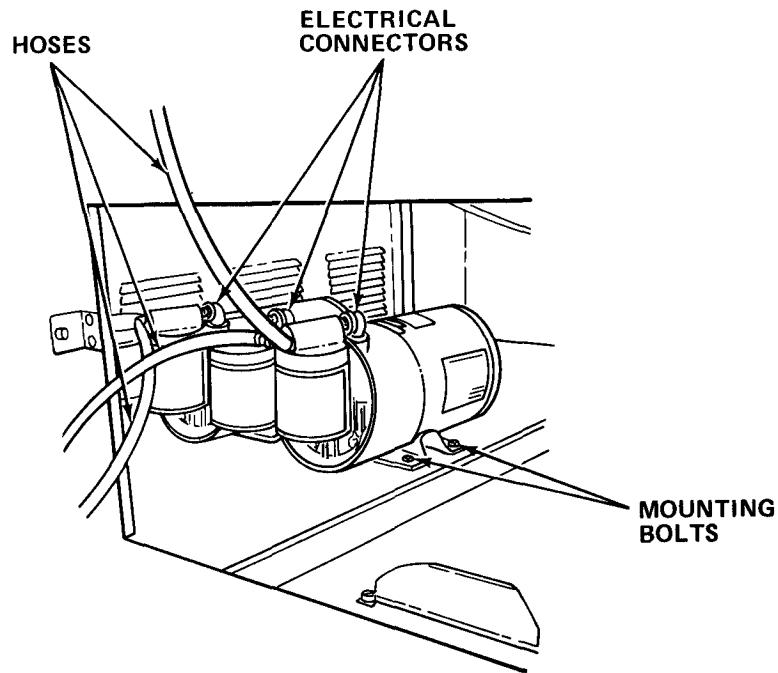
**WARNING**

Death or serious injury may occur from electrical shock unless power is turned off before servicing.

- a. Turn off power panel circuit breaker.



- b. Remove two screws and lower cabinet panel.



- c. Tag and disconnect vacuum hoses from vacuum pumps.

#### NOTE

**If the** rear vacuum pump is to be replaced, the front pump must be removed first.

- d. Remove mounting bolts for vacuum pump(s) and remove defective vacuum pump from inside housing.
- e. Remove electrical cover plate.
- f. Tag and disconnect wires from defective vacuum pump.
- g. Reconnect wires to new vacuum pump.
- h. Reinstall cover plate over electrical connections.
- i. Insert new vacuum pump into flip-top platemaker housing.
- j. Reinstall mounting bolts for vacuum pump(s).
- k. Reconnect vacuum hoses to vacuum pump(s).
- l. Reinstall lower cabinet panel.
- m. Turn on power panel circuit breaker.

2-16.6 Replace Fan Motor Assembly.

MOS: 83FJ6, Reproduction Equipment Repairer

TOOLS :

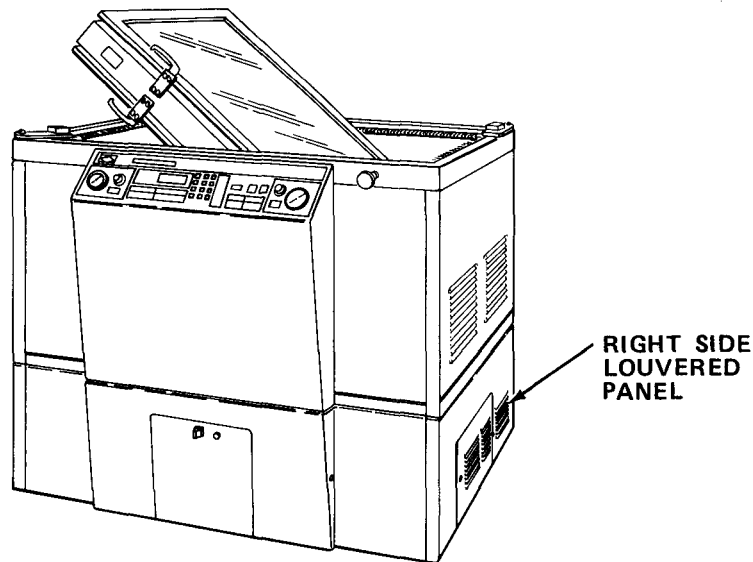
Tool Kit, Light Machine Repair  
Flat Tip Screwdriver  
Combination Wrench Set

SUPPLIES: Fan Motor Assembly(s)

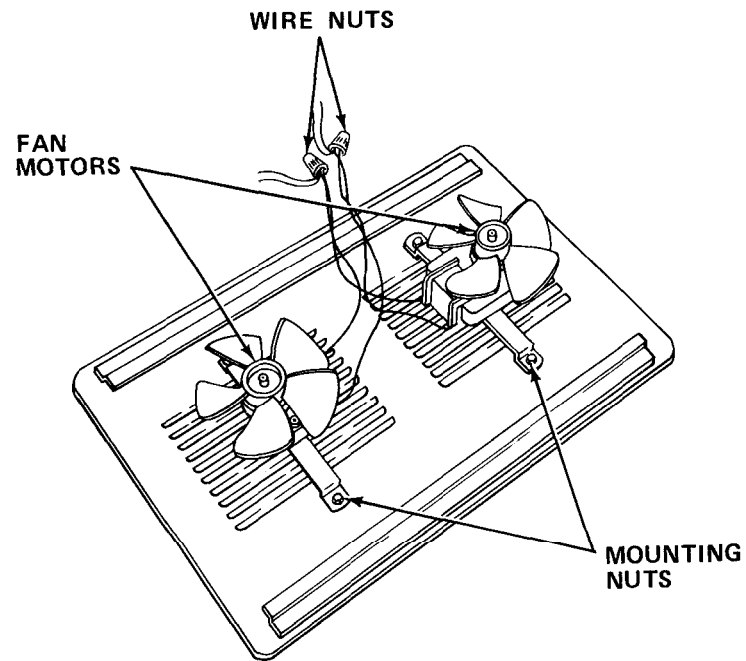
**WARNING**

Death or serious injury may occur from electrical shock unless power is turned off before servicing.

- a. Turn off power panel circuit breaker.



- b. Remove two screws and right side louvered panel.
- c. Carefully remove wires from hook inside cabinet to gain access to wire nuts.



- d. Tag and disconnect wires to defective fan motor.
- e. Remove mounting nuts and defective fan motor and bracket.
- f. Remove fan motor from bracket.
- g. Attach new fan motor to bracket and install with mounting nuts.
- h. Reconnect wires to new fan motor.
- i. Suspend wires on hook inside cabinet to remove excess slack in wires.
- j. Reinstall right side louvered panel.
- k. Turn on power panel circuit breaker.

2-16.7 Replace Vacuum Blanket Assembly(s).

MOS: 83FJ6, Reproduction Equipment Repairer

TOOLS :

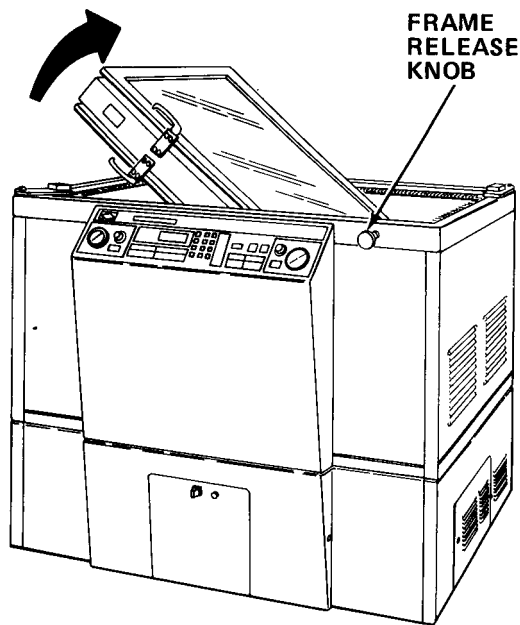
Tool Kit, Light Machine Repair

Flat Tip Screwdriver

Nut Driver Set

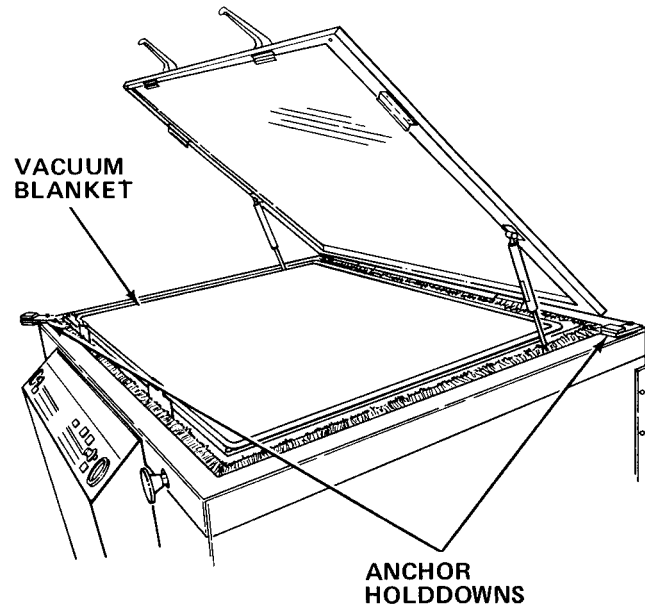
Offset Flat Tip Screwdriver

SUPPLIES: Vacuum Blanket Assembly(s)



- a. Rotate glass frame so that defective blanket assembly is on the top, then lock into place with frame release knob.
- b. Unlock left- and right-hand latches and lift glass frame until the two lift arms take hold and open frame completely.





- c. Remove retaining screws and four blanket anchor holddowns.
- d. Carefully remove two vacuum hoses from vacuum blanket assembly.
- e. Remove defective vacuum blanket assembly from vacuum frame base.
- f. Remove defective vacuum blanket assembly.
- g. Install new vacuum blanket assembly on vacuum frame.
- h. Carefully reinstall two vacuum hoses to new vacuum blanket assembly.
- i. Reinstall four blanket anchor holddowns and retaining screws.
- j. Lower glass frame and lock left- and right-hand latches into place.

**TM 5-3610-259-14**

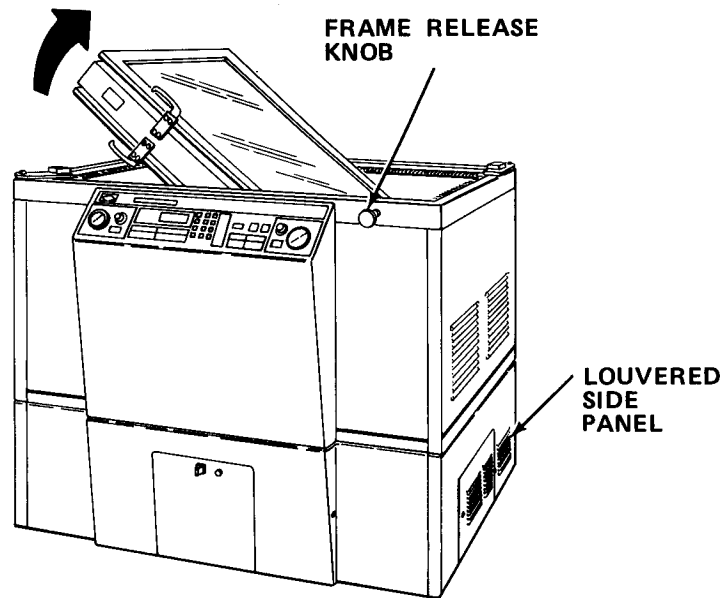
2-16.8 Replace Lift Arm(s).

MOS: 83FJ6, Reproduction Equipment Repairer

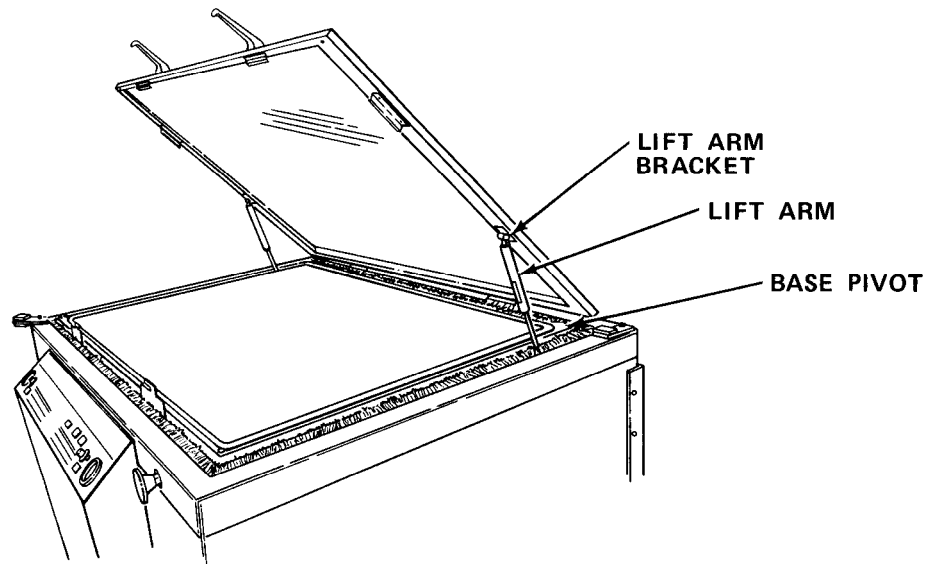
TOOLS:

Tool Kit, Light Machine Repair  
Flat Tip Screwdriver  
Hex Head Key Wrench Set  
Needle Nose Pliers

SUPPLIES: Lift Arm(s)



- a. Rotate glass frame so that defective lift arm(s) are on top; then lock into place with frame release knob.
- b. Unlock left- and right-hand latches and lift glass frame until the lift arms take hold and open glass frame completely.
- c. Prop up glass frame to prevent it from falling when lift arm is removed.



- d. Carefully remove three E clips on pivot pin at base of lift arm,
- e. Using pliers, carefully remove pivot pin toward outside of platemaker.
- f. Remove lift arm bracket from glass frame.
- g. Remove E clip from lift arm bracket pin and remove pin and defective lift arm.
- h. Install new lift arm, and lift arm bracket pin into lift arm bracket and retain in place with E clip.
- i. Reinstall lift arm bracket on glass frame.

#### NOTE

Lift glass frame slightly to aid in aligning holes for pivot pin.

- j. Reinstall pivot pin through outside frame, through lift arm and into inside frame.
- k. Reinstall E clips on pivot pin.
- l. Remove item used to prop up glass frame.
- m. Lower glass frame and lock left- and right-hand latches into place.

2-16.9 Replace Glass Frame Glass.

MOS: 83FJ6, Reproduction Equipment Repairer

PERSONNEL: Two persons are required to perform this procedure.

TOOLS:

Tool Kit, Light Machine Repair  
Hex Head Key Wrench Set

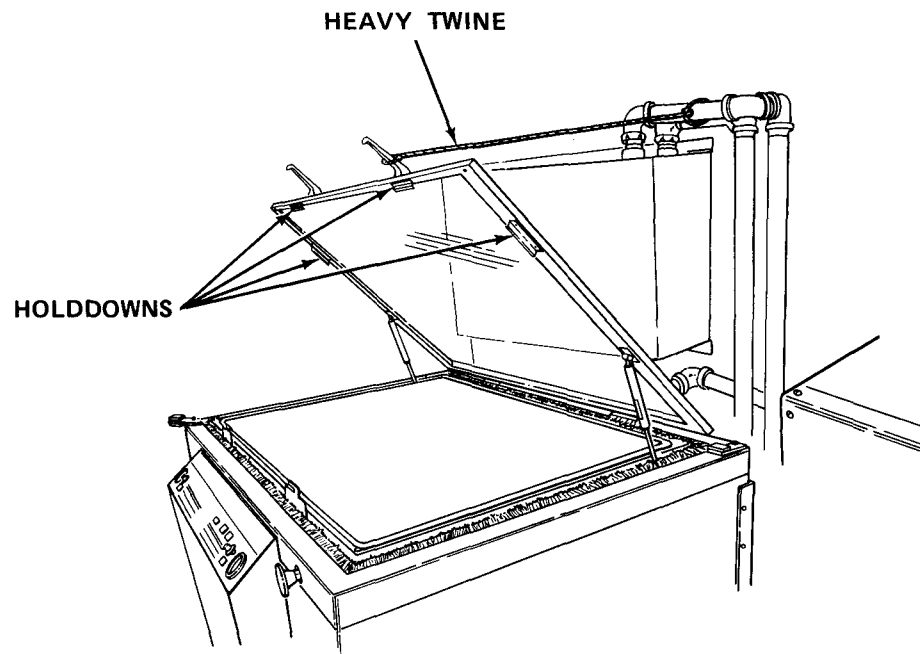
SUPPLIES: Glass  
Rope or Heavy Twine, Approximately 3 Feet (Item 45, Appendix E)

**WARNING**

- Serious injury may occur if inadequate number of personnel are used to remove/install glass. This glass weighs 35 lbs.
- To prevent serious injury, remove all pieces of broken glass possible, prior to raising glass frame to an upright position.
  - a. Unlock left- and right-hand latches and lift glass frame until the lift arms take hold and open the glass frame completely.
  - b. Remove E clips from both lift arm bracket pins and remove pins.
  - c. Allow lift arms to lie horizontally inside platemaker frame.
  - d. Secure glass frame in an upright position by tying twine or rope from the left- and right-hand latches to pipes from water tank.

**WARNING**

Additional pieces of broken glass may fall from frame as holdowns are removed or loosened. Exercise extreme caution to prevent personal injury.



- e. Carefully remove eight glass hold downs and remove defective glass.
- f. Clean glass frame and vacuum blanket to remove any broken glass.
- g. Carefully install new glass in frame and secure in place with glass hold downs.
- h. Slack the twine or rope from the water pipes to slightly lower glass frame enough to reinstall lift arms.
- i. Aline lift arms into lift arm brackets. Secure with lift arm bracket pins and E clips.
- j. Remove rope or twine, and lower glass frame. Lock left- and right-hand latches in place.

2-16.10 Remove/Install Control Panel.

MOS: 83FJ6, Reproduction Equipment Repairer

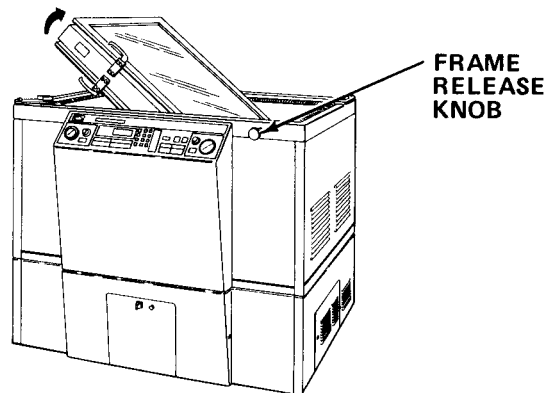
TOOLS:

Tool Kit, Light Machine Repair  
Hex Head Key Wrench Set  
Flat Tip Screwdriver

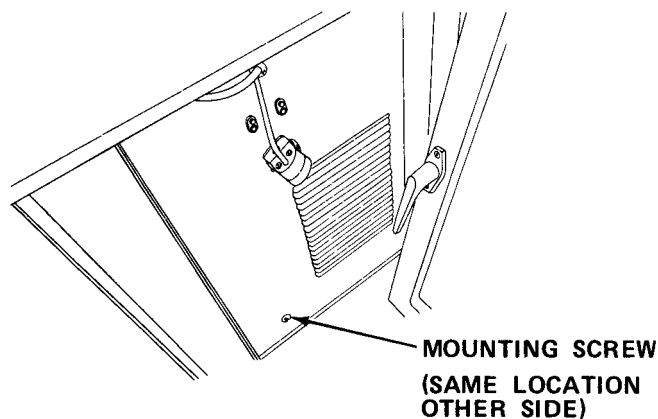
**WARNING**

Death or serious injury may occur from electrical shock unless power is turned off before servicing.

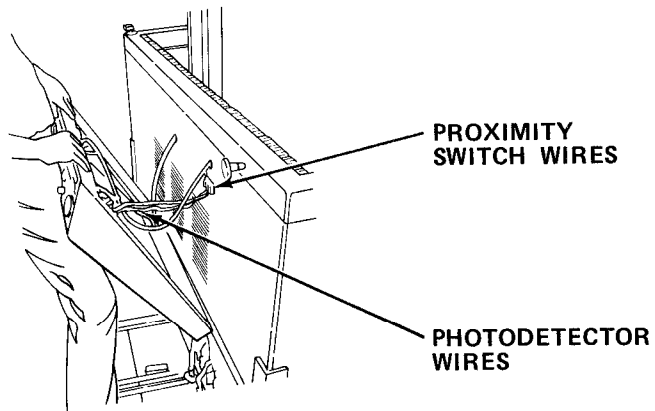
- a. Turn off power panel circuit breaker.



- b. Pull out frame release knob and flip glass frame into vertical position.



- c. Remove mounting screws for control panel.
- d. Carefully lift control panel from its mount to gain access to wiring.



- e. Tag and disconnect wires for photodetector assembly.
- f. Tag and disconnect wires for glass frame proximity switch from terminal block.
- g. Tag and disconnect vacuum hoses from vacuum gages.
- h. Carefully set control panel back onto top retaining lip.
- i. Remove two screws and lower cabinet panel.
- j. Tag and disconnect plug connector for control panel.
- k. Remove control panel from flip-top platemaker and place on a convenient work surface.
- l. Carefully reinstall control panel onto top retaining lip.
- m. Reconnect plug connector for control panel.
- n. Reinstall lower cabinet panel.
- o. Carefully lift control panel from retaining lip to gain access to wiring.
- p. Reconnect vacuum hoses to vacuum gages.
- q. Reconnect wires for glass frame proximity switch to terminal block.
- r. Reconnect wires for photodetector assembly.
- s. Carefully lift control panel onto its mount.
- t. Reinstall mounting screws for control panel.
- u. Rotate glass frame into horizontal position and lock into place with frame release knob.
- v. Turn on power panel circuit breaker.

2-16.11 Replace Vacuum Gage.

MOS: 83FJ6, Reproduction Equipment Repairer

TOOLS:

Tool Kit, Light Machine Repair

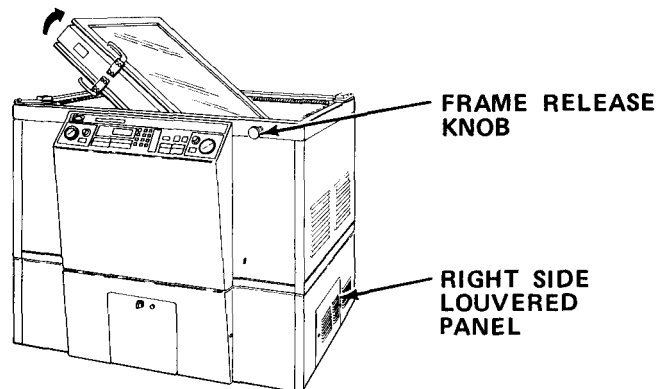
Flat Tip Screwdriver  
Hex Head Key Wrench Set  
Combination Wrench Set

SUPPLIES: Vacuum Gage

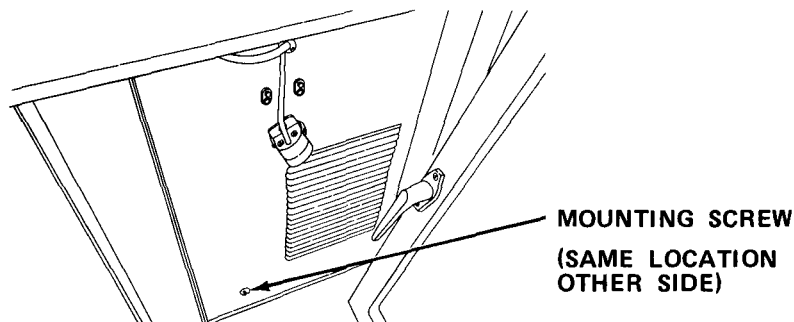
**WARNING**

Death or serious injury may occur from electrical shock unless power is turned off before servicing.

- a. Turn off power panel circuit breaker.

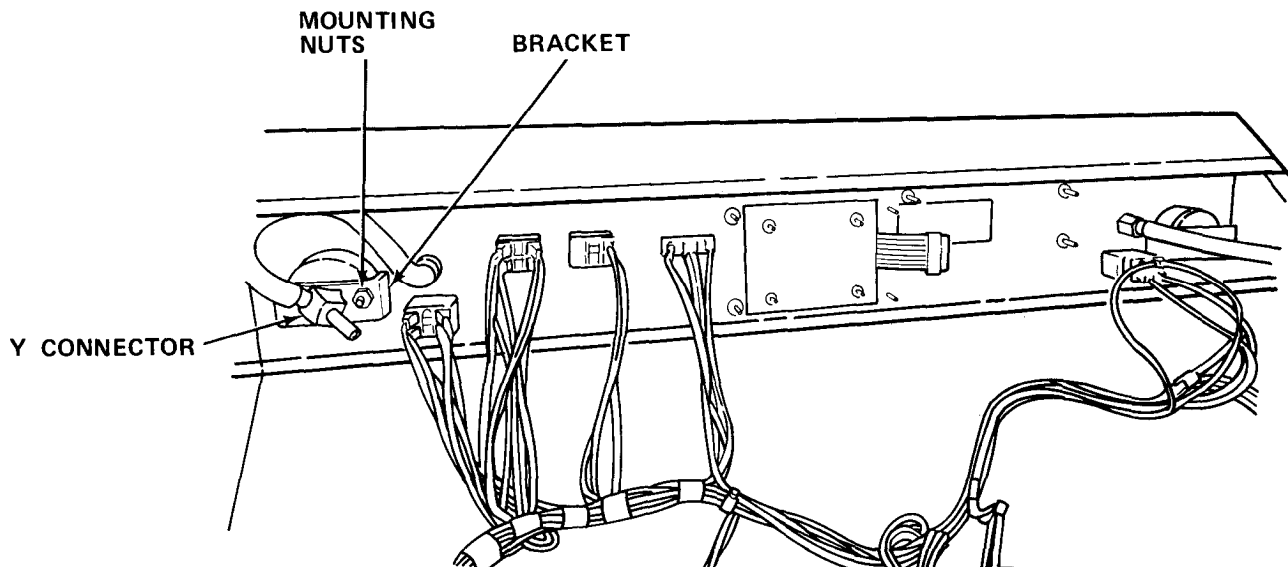


- b. Pull out frame release knob and flip glass frame into vertical position.



- c. Remove mounting screws for control panel.
- d. Carefully lift control panel from its mount to gain access to wiring.





- e. Remove Y hose connector from backside of vacuum gage.
- f. Remove two mounting nuts from vacuum gage and remove defective vacuum gage, with bracket and y hose connector, through top of control panel.
- g. Install new vacuum gage through top of control panel and place mounting bracket around gage so that mounting studs fit through the holes. Attach in place with mounting nuts. Be sure gage is properly centered on panel.
- h. Reinstall Y hose connector on back side of vacuum gage.
- i. Carefully lift control panel onto its mount.
- j. Reinstall mounting screws for control panel.
- k. Rotate glass frame into horizontal position and lock into place with frame release knob.
- l. Turn on power panel circuit breaker.

2-16.12 Replace Power Switch (es).

MOS: 83FJ6, Reproduction Equipment Repairer

TOOLS :

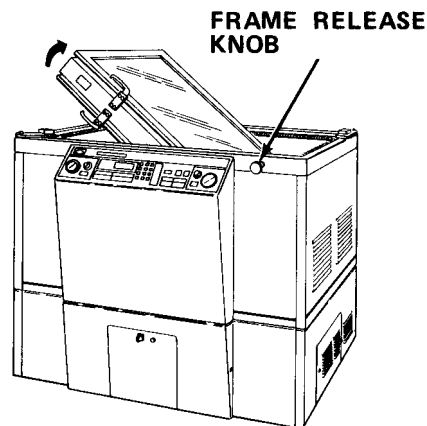
Tool Kit, Light Machine Repair  
Flat Tip Screwdriver  
Hex head Key Wrench Set  
Slip Joint Pliers

SUPPLIES: Power Duty PB Switch(es)

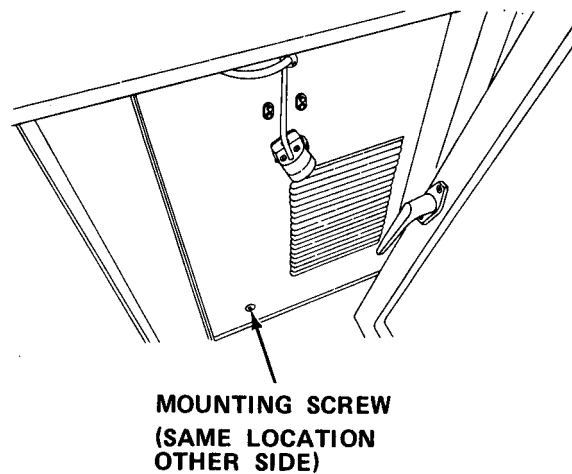
WARNING

Death or serious injury may occur from electrical shock unless power is turned off before servicing.

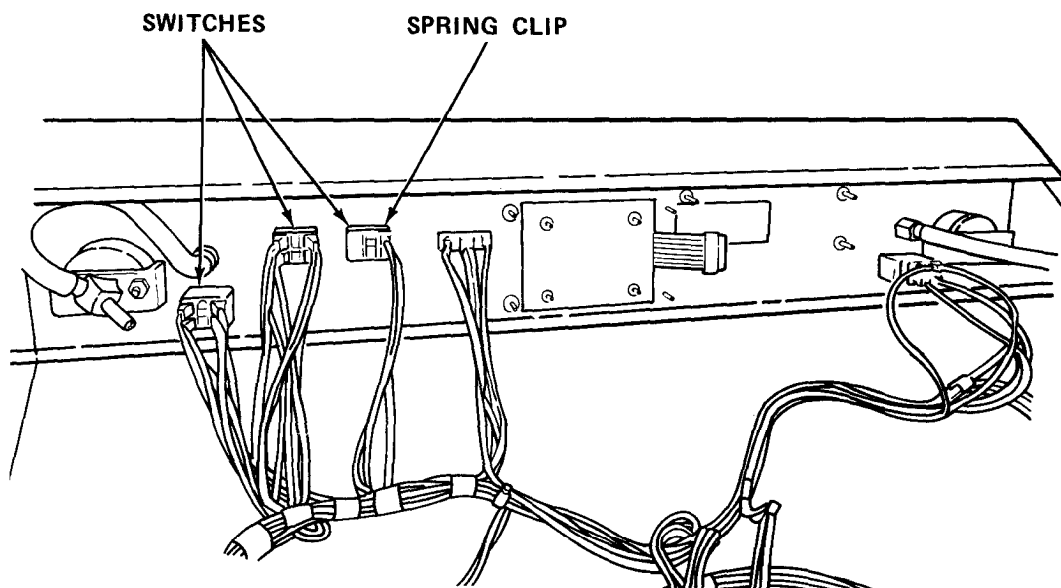
- a. Turn off power panel circuit breaker.



- b. Pull out frame release knob and flip glass frame into vertical position.



- c. Remove mounting screws for control panel.
- d. Carefully lift control panel from its mount to gain access to wiring.



- e. Tag and disconnect wires from defective switch.
- f. Push in spring clip retainer around switch and remove defective switch through top of control panel.
- g. Install new switch through top of control panel and snap into place.
- h. Reconnect wiring to new switch.
- i. Carefully lift control panel onto its mount.
- j. Reinstall mounting screws for control panel.
- k. Rotate glass frame into horizontal position and lock into place with frame release knob.
- l. Turn on power panel circuit breaker.

2-16.13 Replace Pilot/Exposure Indicator Lamps.

MOS: 83FJ6, Reproduction Equipment Repairer

TOOLS:

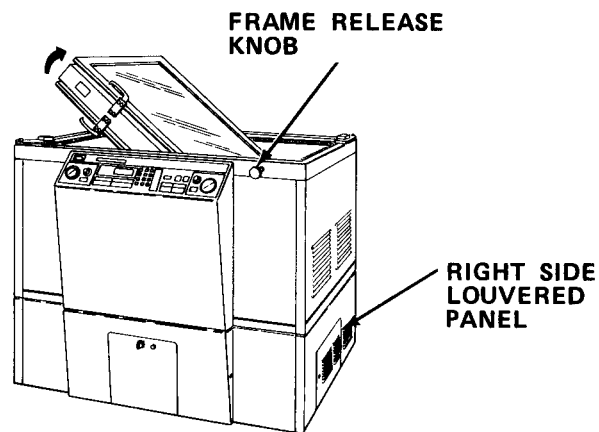
Tool Kit, Light Machine Repair  
Flat Tip Screwdriver  
Hex Head Key Wrench Set  
Slip Joint Pliers

SUPPLIES: Indicator Lamp

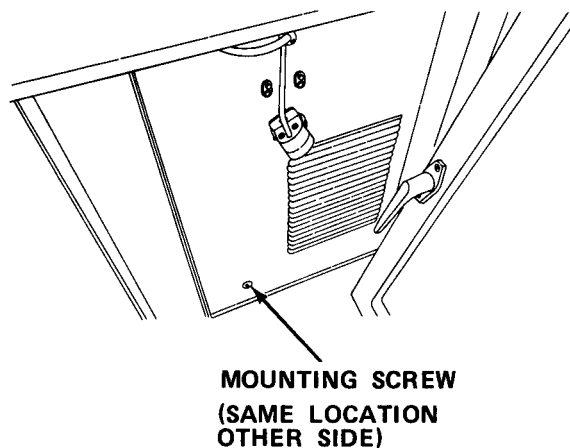
**WARNING**

Death or serious injury may occur from electrical shock unless power is turned off before servicing.

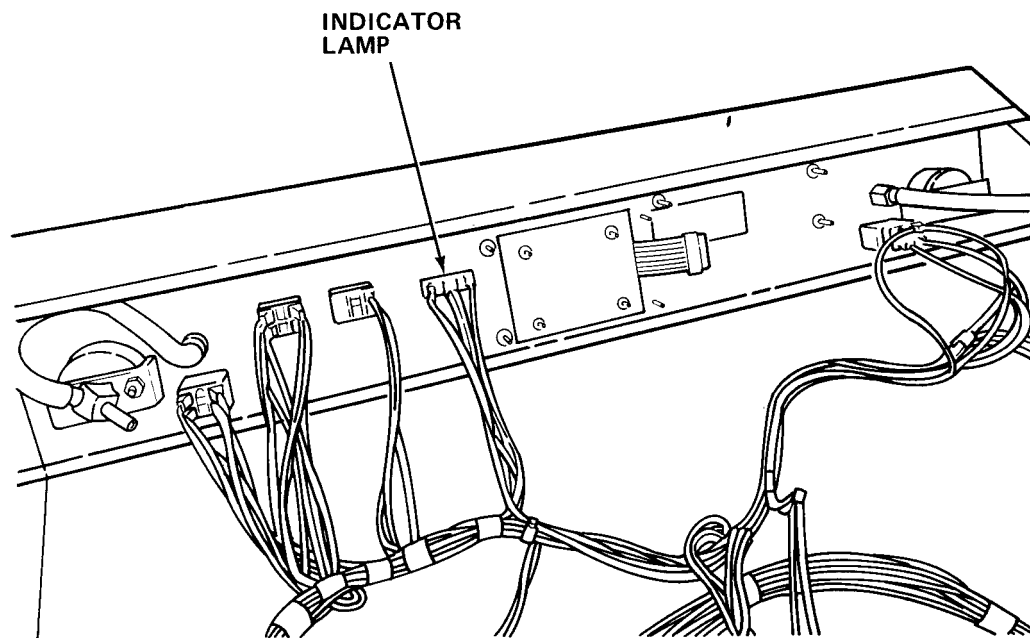
- a. Turn off power panel circuit breaker.



- b. Pull out frame release knob and flip glass frame into vertical position.



- c. Remove mounting screws for control panel.
- d. Carefully lift control panel from its mount to gain access to wiring.



- e. Tag and disconnect wires from defective indicator lamp.
- f. Push in spring clip retainer around indicator and remove defective indicator lamp through top of control panel.
- g. Install new indicator lamp through top of control panel and snap into place.
- h. Reconnect wiring to new indicator.
- i. Carefully lift control panel onto its mount.
- j. Reinstall mounting screws for control panel.
- k. Rotate glass frame into horizontal position and lock into place with frame release knob.
- l. Turn on power panel circuit breaker.

**TM 5-3610-259-14**

2-16. 14 Replace Vacuum Bleed Valve.

MOS: 83FJ6, Reproduction Equipment Repairer

TOOLS:

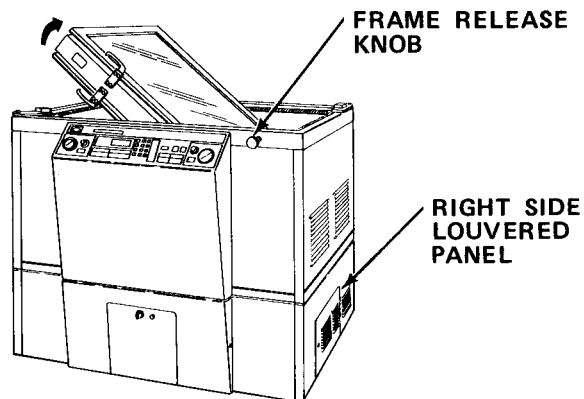
Tool Kit, Light Machine Repair  
Flat Tip Screwdriver  
Hex Head Key Wrench Set  
Combination Wrench Set  
Pliers

SUPPLIES: Vacuum Bleed Valve

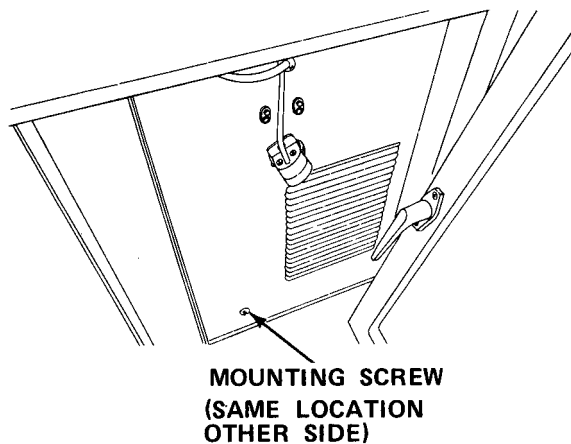
**WARNING**

Death or serious injury may occur from electrical shock unless power is turned off before servicing.

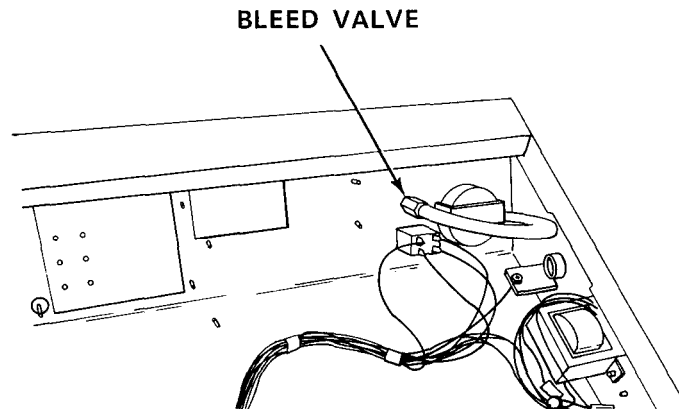
- a. Turn off power panel circuit breaker.



- b. Pull out frame release knob and flip glass frame into vertical position.



- c. Remove mounting screws for control panel.
- d. Carefully lift control panel from its mount to gain access to wiring.



- e. Remove vacuum bleed valve control knob by turning left until knob and needle valve are removed.
- f. Remove vacuum hose from hose connector on bottom of bleed valve.
- g. Remove locknut from top of vacuum bleed valve and remove defective bleed valve.
- h. Remove hose connector from bleed valve.
- i. Reinstall hose connector to new bleed valve.
- j. Install new vacuum bleed valve and locknut.
- k. Reinstall vacuum hose to hose connector,
- l. Loosen setscrew on vacuum bleed valve control knob and remove defective needle valve.
- m. Install new needle valve into control knob and tighten setscrew.
- n. Reinstall vacuum bleed valve control knob and needle valve by inserting into bleed valve and turning right until valve is closed.
- o. Carefully lift control panel onto its mount.
- p. Reinstall mounting screws for control panel.
- q. Rotate glass frame into horizontal position and lock into place with frame release knob.
- r. Turn on power panel circuit breaker.

2-16.15 Replace Filament Transformer (FLT-1).

MOS: 83FJ6, Reproduction Equipment Repairer

TOOLS:

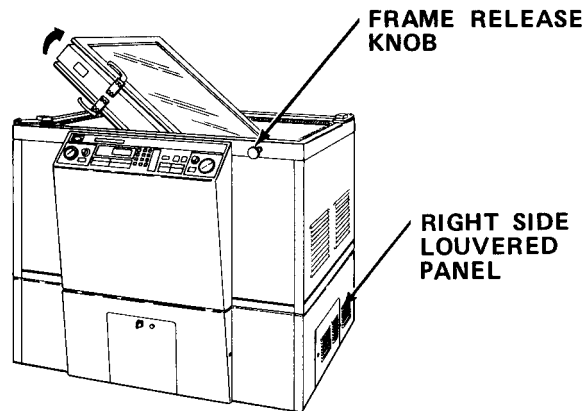
Tool Kit, Light Machine Repair  
Flat Tip Screwdriver  
Hex Head Key Wrench Set  
Combination Wrench Set  
Slip Joint Pliers

SUPPLIES: Filament Transformer

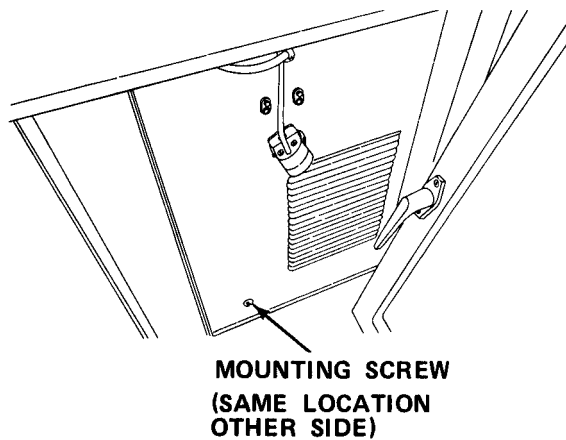
**WARNING**

Death or serious injury may occur from electrical shock unless power is turned off before servicing.

- a. Turn off power panel circuit breaker.

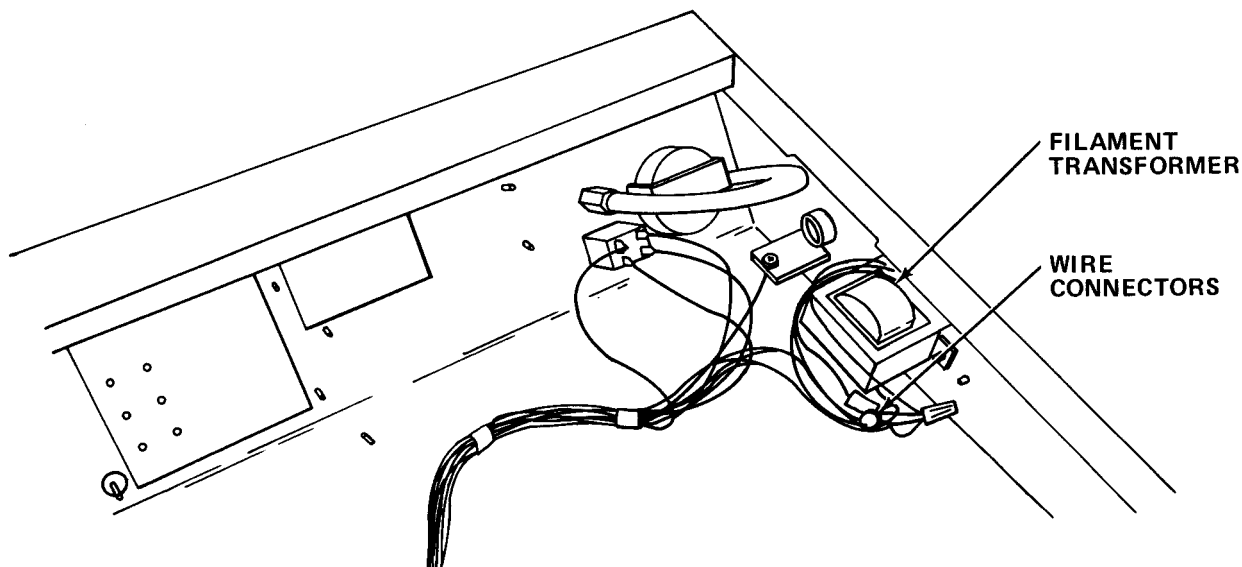


- b. Pull out frame release knob and flip glass frame into vertical position.





- c. Remove mounting screws for control panel.
- d. Carefully lift control panel from its mount to gain access to wiring.



- e. Tag and disconnect wires for filament transformer.
- f. Remove nuts and screws, and defective filament transformer.
- g. Install new filament transformer and secure with screws and nuts.
- h. Reconnect wiring for new filament transformer.
- i. Carefully lift control panel onto its mount.
- j. Reinstall mounting screws for control panel.
- k. Rotate glass frame into horizontal position and lock into place with frame release knob.
- l. Turn on power panel circuit breaker.

2-16.16 Replace Master Circuit Breaker (CB1).

MOS: 83FJ6, Reproduction Equipment Repairer

TOOLS :

Tool Kit, Light Machine Repair

Flat Tip Screwdriver

Hex Head Key Wrench Set

Slip Joint Pliers

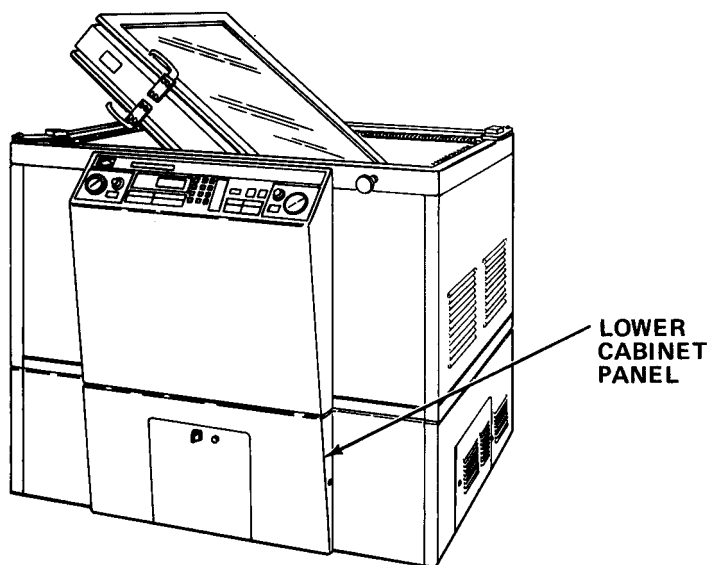
Extension Light

SUPPLIES: Circuit Breaker 5 Amp

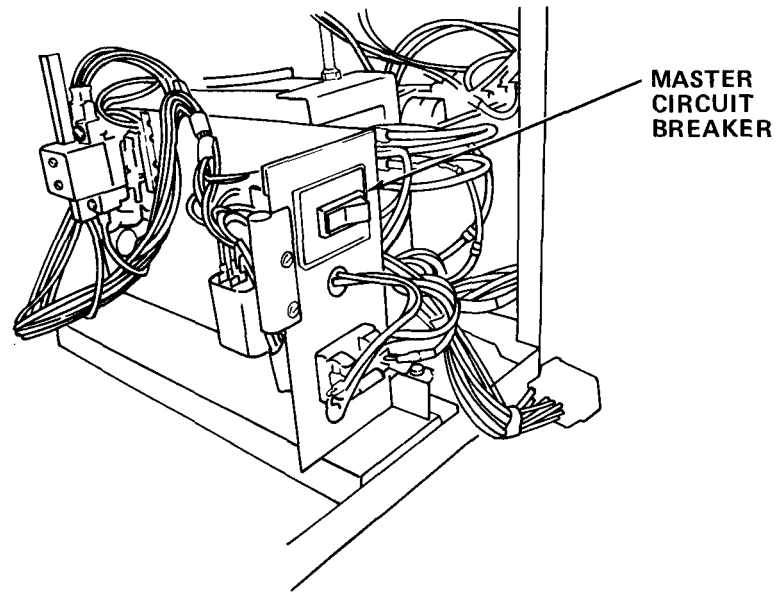
**WARNING**

Death or serious injury may occur from electrical shock unless power is turned off before servicing.

- a. Turn off power panel circuit breaker.



- b. Remove two screws and lower cabinet panel.



- c. Tag and disconnect wires from master circuit breaker.
- d. Push in spring clip retainer around circuit breaker and remove defective circuit breaker.
- e. Install new circuit breaker and snap into place.
- f. Reconnect wiring to new circuit breaker.
- g. Reinstall lower cabinet panel.
- h. Turn on power panel circuit breaker.

2-16.17 Replace Vacuum Pumps Relay (K3).

MOS: 83FJ6, Reproduction Equipment Repairer

TOOLS:

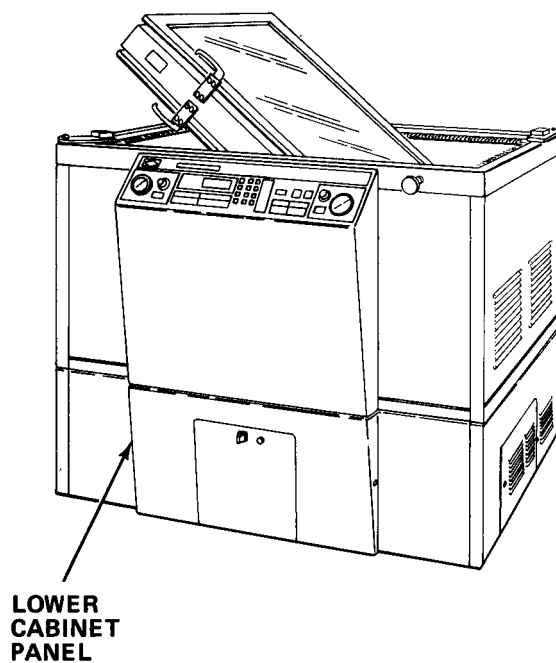
Tool Kit, Light Machine Repair  
Flat Tip Screwdriver  
Hex Head Key Wrench Set  
Slip Joint Pliers

SUPPLIES: 3PDT Sealed Relay 230 V

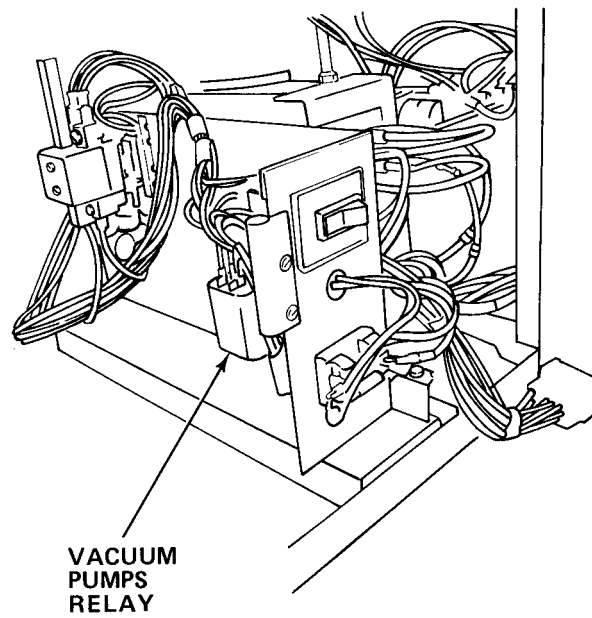
**WARNING**

Death or serious injury may occur from electrical shock unless power is turned off before servicing.

- a. Turn off power panel circuit breaker.



- b. Remove two screws and lower cabinet panel.



- c. Tag and disconnect wires from vacuum pumps relay.
- d. Remove mounting screws and defective vacuum pumps relay.
- e. Install new vacuum pumps relay.
- f. Reconnect wiring for new vacuum pumps relay.
- g. Reinstall lower cabinet panel.
- h. Turn on power panel circuit breaker.

2-16. 18 Replace Lower Cabinet Door Proximity Switch (PX1)

MOS: 83FJ6, Reproduction Equipment Repairer

TOOLS :

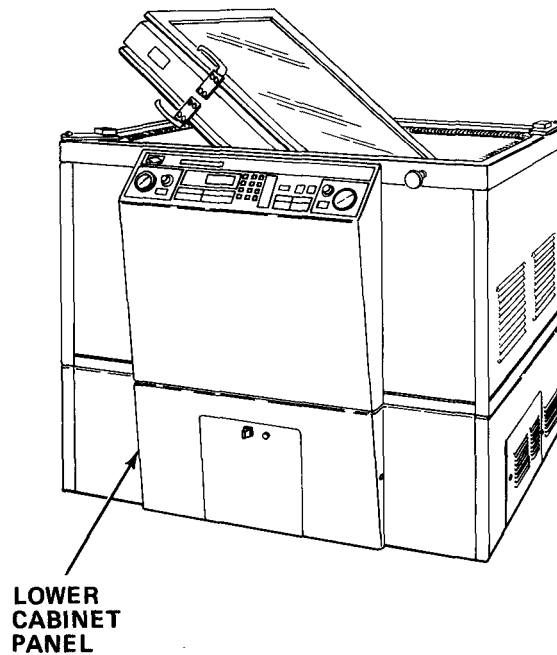
Tool Kit, Light Machine Repair  
Flat Tip Screwdriver  
Hex Head Key Wrench Set

SUPPLIES: Proximity Switch

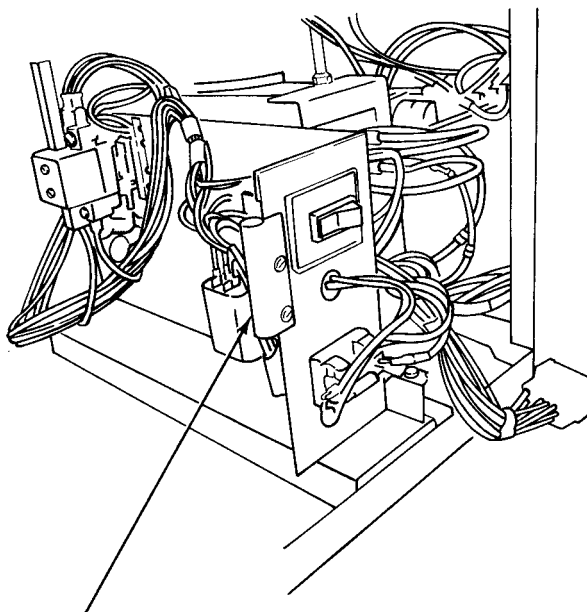
**WARNING**

Death or serious injury may occur from electrical shock unless power is turned off before servicing.

- a. Turn off power panel circuit breaker.



- b. Remove two screws and lower cabinet panel.



**LOWER CABINET DOOR  
PROXIMITY SWITCH**

- c. Tag and disconnect wires for lower cabinet door proximity switch.
- d. Remove mounting screws and defective lower cabinet door proximity switch.
- e. Install new lower cabinet door proximity switch.
- f. Reconnect wiring for proximity switch.
- g. Reinstall lower cabinet panel.
- h. Turn on power panel circuit breaker.

2-16.19 Replace Autoformer Relay (K2).

MOS: 83FJ6, Reproduction Equipment Repairer

TOOLS:

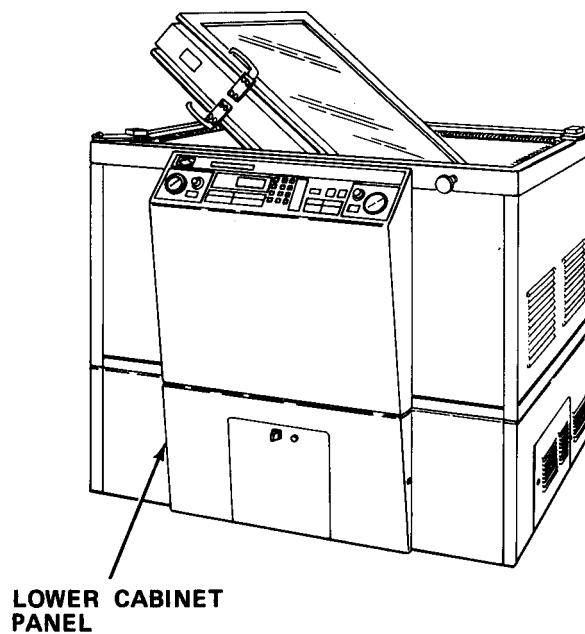
Tool Kit, Light Machine Repair  
Flat Tip Screwdriver  
Hex Head Key Wrench Set

SUPPLIES: Contactor 25A, 230 V

**WARNING**

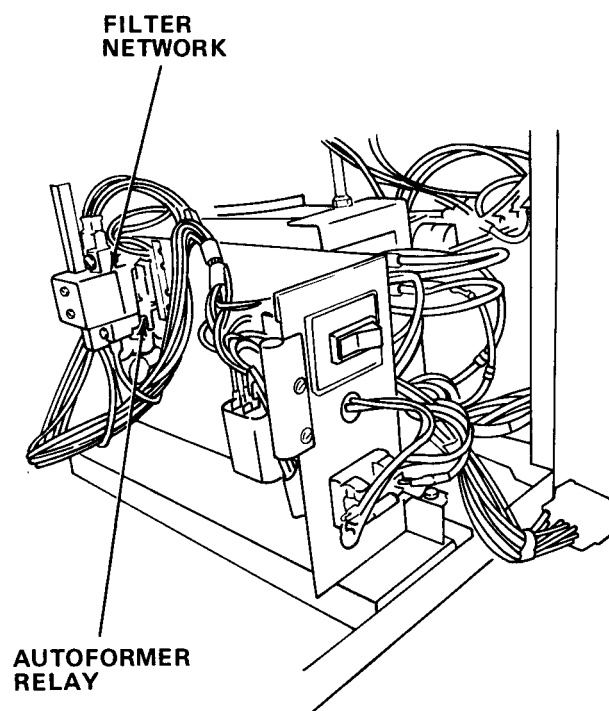
Death or serious injury may occur from electrical shock **unless** power is turned off before servicing.

- a. Turn off power panel circuit breaker.



- b. Remove two screws and lower cabinet panel.





- c. Tag and disconnect filter network from top of autoformer relay.
- d. Tag and disconnect wires from autoformer relay.
- e. Remove mounting screws and defective autoformer relay.
- f. Install new autoformer relay.
- g. Reconnect wiring to new autoformer relay.
- h. Reconnect filter network on top of autoformer relay.
- i. Reinstall lower cabinet panel.
- j. Turn on power panel circuit breaker.

2-16.20 Replace Autoformer (XT1).

MOS: 83FJ6, Reproduction Equipment Repairer

TOOLS :

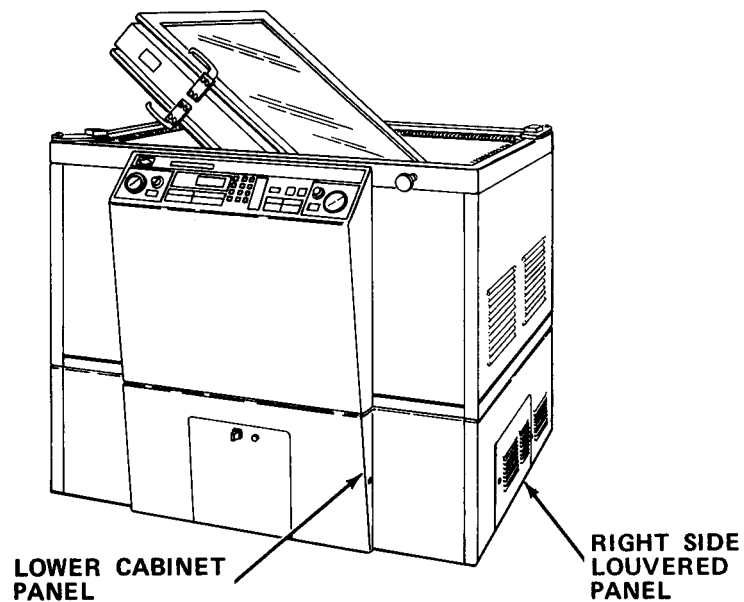
Tool Kit, Light Machine Repair  
Flat Tip Screwdriver  
Hex Head Key Wrench Set

SUPPLIES: 3kW Autoformer

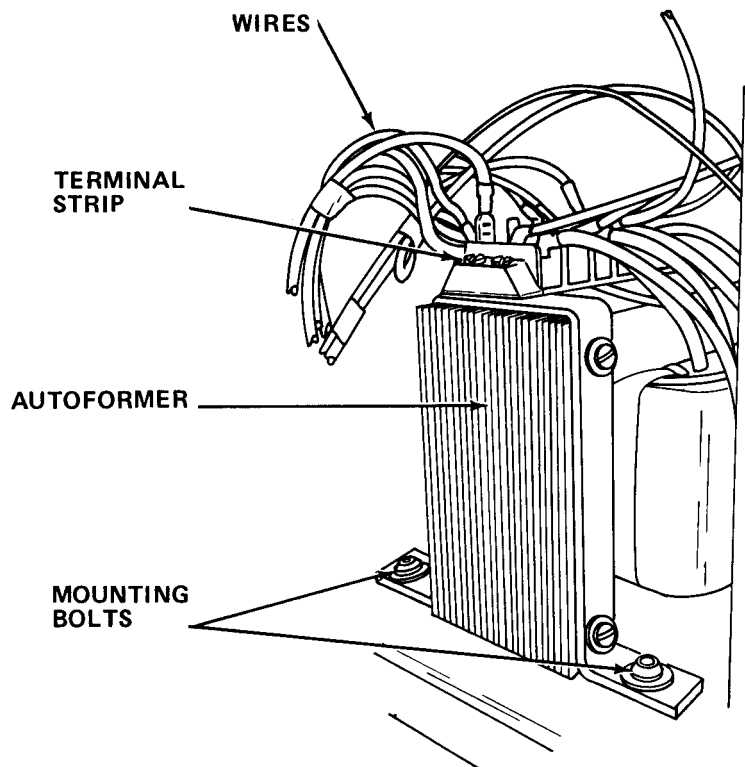
**WARNING**

Death or serious injury may occur from electrical shock unless power is turned off before servicing.

- a. Turn off power panel circuit breaker.



- b. Remove two screws and lower cabinet panel.
- c. Remove right side louvered panel.



- d. Tag and disconnect wires from autoformer terminal strip.
- e. Remove mounting bolts and defective autoformer.
- f. Install new autoformer and mounting bolts.
- g. Reconnect wiring to autoformer.
- h. Reinstall right side louvered panel.
- i. Reinstall lower cabinet panel.
- j. Turn on power panel circuit breaker.

2-16.21 Flush Vacuum Pump(s).

MOS: 83FJ6, Reproduction Equipment Repairer

TOOLS:

Tool Kit, Light Machine Repair  
Flat Tip Screwdriver  
Hex Head Key Wrench Set  
Tool Kit, Precision  
Permanent Magnet

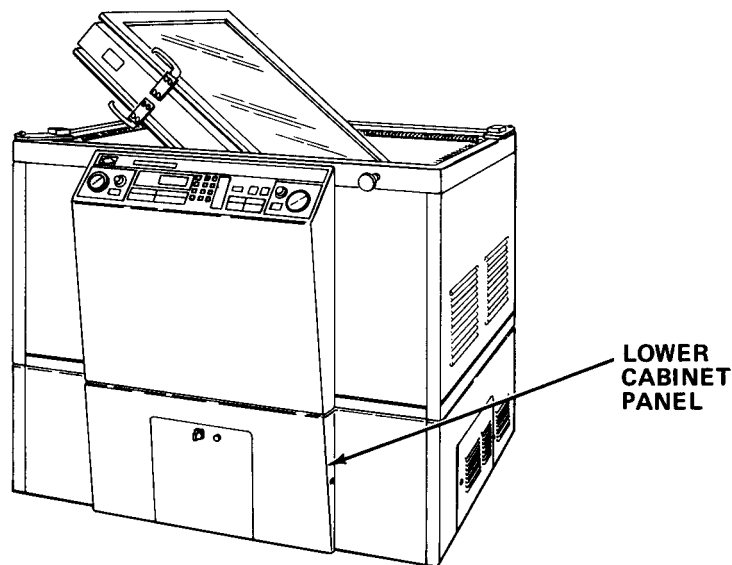
SUPPLIES: Nonflammable Flushing Solvent (Item , Appendix E)  
Rubber Matting

**WARNING**

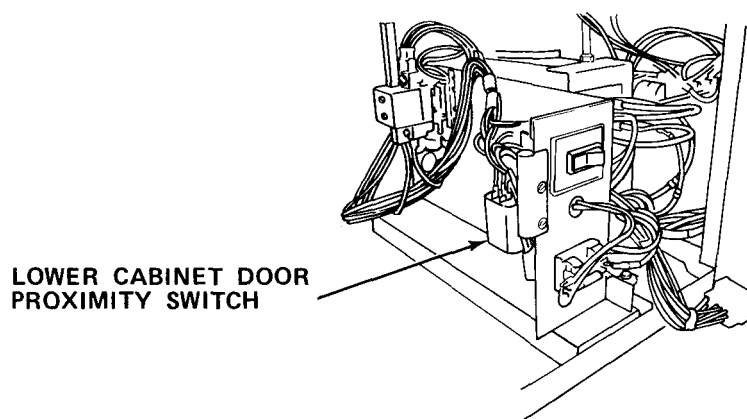
Electrical shock hazard. You must stand on rubber matting while performing this procedure. Death or serious injury may occur.

- Always wear eye/face protective equipment when using solvent to prevent injury to eyes.
- Fumes and chemicals used in flushing vacuum pump may result in serious injury if personnel do not operate equipment with proper ventilation.

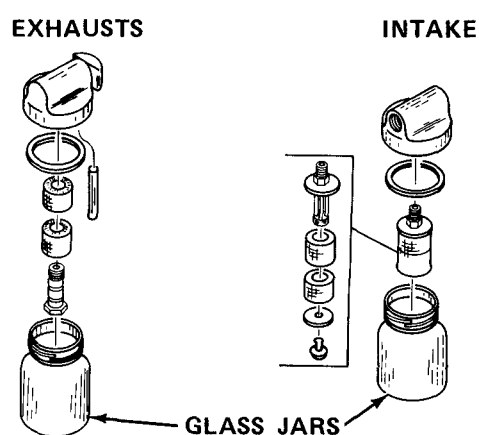
- a. Turn off power panel circuit breaker.



- b. Remove two screws and lower cabinet panel.



- c. Tape magnet over proximity switch.



- d. Remove glass jars from around intake and exhaust.
- e. Carefully remove intake and exhaust filter assemblies.
- f. Turn on power panel circuit breaker.
- g. Turn on vacuum pump switch for vacuum pump being flushed.
- h. Introduce 1 to 2 ounces of solvent into inlets.
- i. Turn off vacuum pump switch.
- j. Turn off power panel circuit breaker.
- k. Carefully install intake and exhaust filter assemblies.
- l. Reinstall glass jars around intakes and exhausts.
- m. Remove tape and magnet from proximity switch.
- n. Reinstall lower cabinet panel.
- o. Turn on power panel circuit breaker.

2-16.22 Replace Photodetector Assembly (PE1).

MOS: 83FJ6, Reproduction Equipment Repairer

TOOLS :

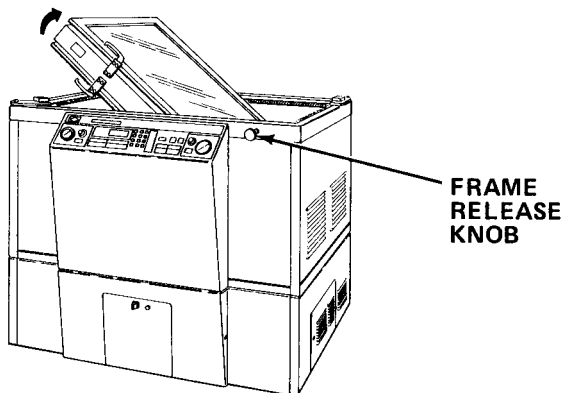
Tool Kit, Light Machine Repair  
Flat Tip Screwdriver  
Hex Head Key Wrench Set  
Slip Joint Pliers

SUPPLIES: Photodetector Assembly

**WARNING**

Death or serious injury may occur from electrical shock unless power is turned off before servicing.

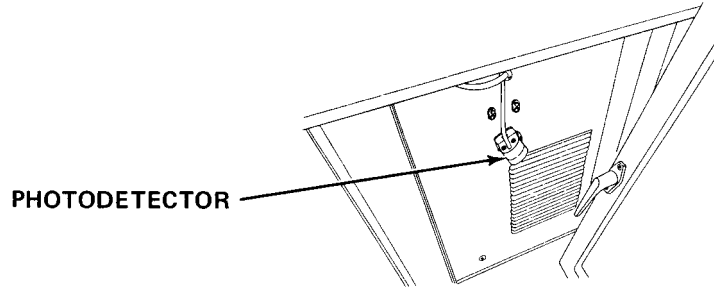
- a. Turn off power panel circuit breaker.



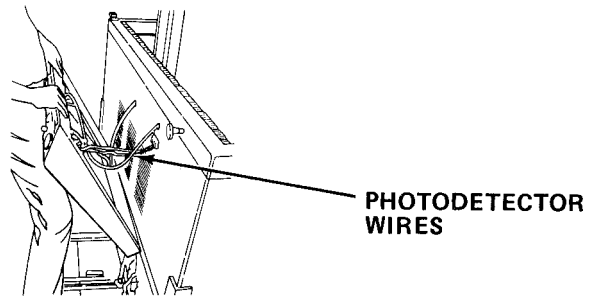
- b. Pull out frame release knob and flip glass frame into vertical position.

**CAUTION**

When working inside platemaker, ensure that no tools or heavy objects strike the glass light shield.



- c. Remove mounting screws holding photodetector assembly and set assembly aside.
- d. Remove screws for control panel.
- e. Carefully lift control panel from its mount to gain access to control circuit board.



- f. Tag and disconnect wires for photodetector assembly.
- g. Remove defective photodetector assembly from inside housing.
- h. Feed wires from new photodetector assembly from inside housing and connect wires to control circuit board.
- i. Secure photodetector assembly in place with mounting screws.
- j. Carefully lift control panel onto its mount and fit into place.
- k. Reinstall mounting screws for control panel.
- l. Rotate glass frame into horizontal position and lock into place with frame release knob.
- m. Turn on power panel circuit breaker.
- n. Check adjustment of photodetector assembly by producing a plate. Adjust as necessary (paragraph 2-10.2).

**2-17. PREPARATION FOR STORAGE OR SHIPMENT.** Contact your battalion for packing and shipping instructions.

Section V. DIRECT/GENERAL SUPPORT MAINTENANCE

2-18. REPAIR PARTS, SPECIAL TOOLS; TEST, MEASUREMENT AND DIAGNOSTIC EQUIPMENT (TMDE); AND SUPPORT EQUIPMENT.

2-18.1 Common Tools and Equipment. For authorized common tools and equipment, refer to the Modified Table of Organization and Equipment (MTOE) applicable to your unit.

2-18.2 Special Tools; Test, Measurement, and Diagnostic Equipment; and Support Equipment. Special Tools, TMDE, and Support Equipment is listed in the applicable repair parts and special tools list and in Appendix B of this manual.

2-18.3 Repair Parts. Repair parts are listed and illustrated in the Repair Parts and Special Tools List, TM 5-3610-285-24P covering direct/general support maintenance for this equipment.

2-19. **DIRECT/GENERAL SUPPORT TROUBLESHOOTING PROCEDURES.** Direct/general support troubleshooting procedures cover the most common malfunctions that may be repaired at the direct/general support level. Repair or adjustment requiring specialized equipment is not authorized unless such equipment is available. Troubleshooting procedures used by lower level maintenance should be conducted in addition to the direct/general support troubleshooting procedures.

**NOTE**

Sufficient data is not available for you to always test or troubleshoot printed circuit boards. When associated wiring, ribbon cables, power cords and other related electrical components have been eliminated as possible faults, then the printed circuit boards must be substituted, one for one, until the fault is isolated.



Table 2-5. DIRECT/GENERAL SUPPORT TROUBLESHOOTING

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
1. KEYPAD INPUTS ARE NOT RECOGNIZED,		<ul style="list-style-type: none"> <li>(a) Replace keypad (paragraph 2-20.4).</li> <li>(b) <b>If</b> problem remains, replace control circuit board (paragraph 2-20.2).</li> </ul>
2. DIGITAL DISPLAY DISPLAYS INCORRECT DATA OR DOES NOT SHOW ANYTHING.		<ul style="list-style-type: none"> <li>(a) Replace keypad (paragraph 2-20.4).</li> <li>(b) If problem persists, replace control circuit board (paragraph 2-20.2).</li> <li>(c) If problem persists, replace digital display board (paragraph 2-20.3).</li> </ul>
3. EXPOSURE TIME VARIES NOTICEABLY DESPITE <b>USING SAME UNITS OF LIGHT.</b>		<p>Check operation of timer circuits on control circuit board as follows:</p> <ul style="list-style-type: none"> <li>(a) Remove integrator circuit board from control circuit board in accordance with paragraph 2-20.1.</li> <li>(b) Turn on flip top platemaker and enter in 20.0 units of light.</li> <li>(c) Press "T" key and verify timer elapses in 20 seconds. Repeat this several times and verify timer elapses in 20 seconds each time. <ul style="list-style-type: none"> <li>(1) If timer elapses in more or less than 20 seconds, replace control circuit board (paragraph 2-20.2).</li> </ul> </li> </ul>

Table 2-5. DIRECT/GENERAL SUPPORT TROUBLESHOOTING - Cent

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
3. EXPOSURE TIME VARIES NOTICEABLY DESPITE USING SAME UNITS OF LIGHT - Cent		<p>(2) If timer elapses correctly, replace integrator circuit board (paragraph 2-20.1).</p> <p>(3) If problem remains, replace photodetector assembly (paragraph 2-16.23).</p>
4. EXPOSURE LAMP DOES NOT OPERATE IN AUTOMATIC MODE.		<p>(a) Replace control circuit board (paragraph 2-20.2).</p> <p>(b) If problem remains, replace integrator circuit board (paragraph 2-20.1).</p>
5. EXPOSURE LAMP DOES NOT OPERATE IN ANY MODE OF OPERATION.		<p>Check continuity of strike transformers as follows:</p> <p>(a) Turn off power panel circuit breaker.</p> <p>(b) Disconnect plug connector for each transformer from 3kW power supply circuit board.</p> <p>(c) Using multi meter, check primary side of transformers at plug connectors for continuity.</p> <p>(d) Connect one multimeter lead on terminal board for autotransformer, and the other lead on fuse clip for exposure lamp and check continuity of transformer's secondary sides.</p> <p>(1) If all continuity checks are good, replace 3kW power supply circuit board (paragraph 2-20.5).</p> <p>(2) <b>If</b> any continuity check fails, replace defective strike transformer (paragraph 2-20.6).</p>

2-20. MAINTENANCE PROCEDURES.

a. This section contains instructions covering direct/general support maintenance functions for the flip-top platemaker. Personnel required are listed only if the task requires more than one.

b. After completing each maintenance procedure, perform operational check to be sure that equipment is properly functioning.

INDEX

PROCEDURE	PARAGRAPH
Replace Integrator Circuit Board <b>(ICB)</b> . . . . .	2-20.1
Replace Control Circuit Board (CCB) . . . . .	2-20.2
Replace Digital Display Board (DD) . . . . .	2-20.3
Replace Keypad (UP) . . . . .	2-20.4
Replace 3kW Power Supply Circuit Board <b>(PSI)</b> . . . . .	2-20.5
Replace Strike Transformer <b>(ST-1 or 2)</b> . . . . .	2-20.6
Replace Strike Transformer Overtemperature Switch (THS1 or 2) . . . . .	2-20.7

2-20.1 Replace Integrator Circuit Board (ICB).

MOS: 35E, Special Electronic Devices Repairer

TOOLS:

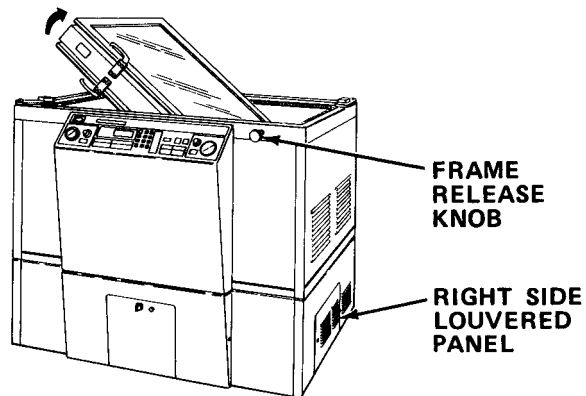
Tool Kit, Electronic Repair  
Hex Head Key Wrench Set

SUPPLIES: Integrator Circuit Board

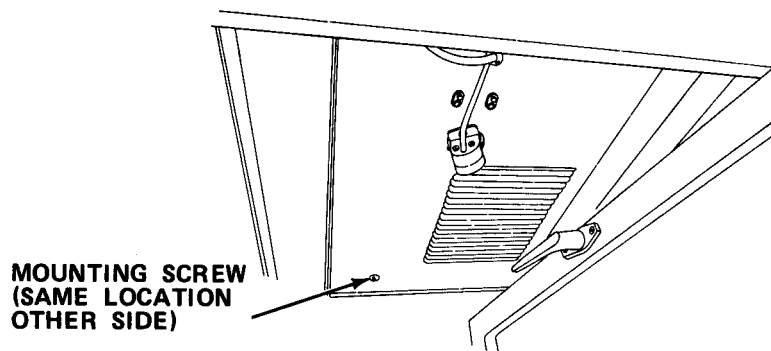
**WARNING**

Death or serious injury may occur from electrical shock unless power is turned off before servicing.

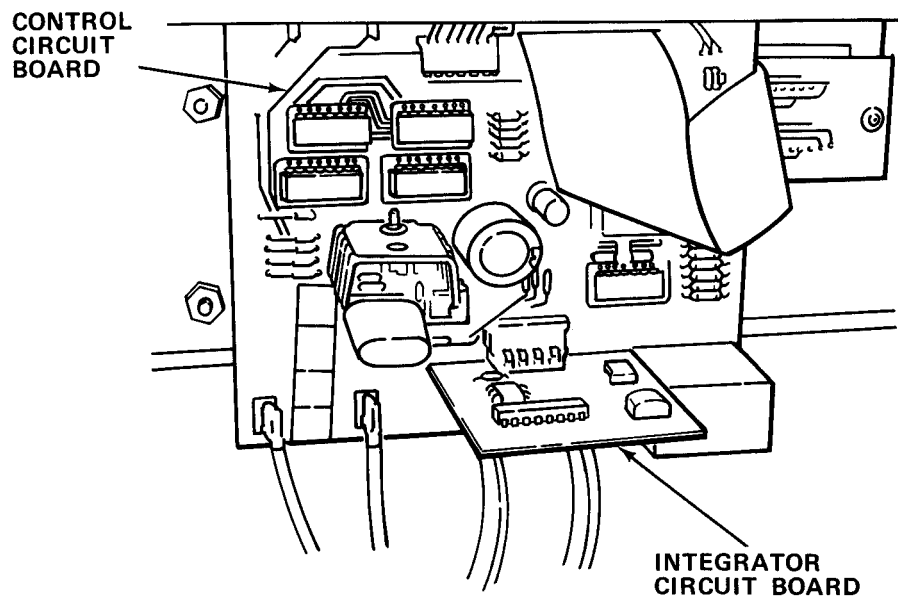
- a. Turn off power panel circuit breaker.



- b. Pull out frame release knob and flip glass frame into vertical position.



- c. Remove mounting screws for control panel.
- d. Carefully lift control panel from its mount to gain access to wiring.



- e. Carefully pull defective integrator circuit board from control circuit board.
- f. Install new integrator circuit board on control circuit board.
- g. Carefully lift control panel onto its mount.
- h. Reinstall mounting screws for control panel.
- i. Rotate glass frame into horizontal position and lock into place with frame release knob.
- j. Turn on power panel circuit breaker.

2-20.2 Replace Control Circuit Board (CCB).

MOS: 35E, Special Electronic Devices Repairer

TOOLS:

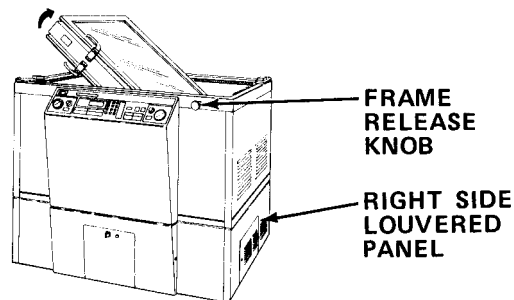
Tool Kit, Electronic Repair  
Hex Head Key Wrench Set  
Slip Joint Pliers

SUPPLIES: Control Circuit Board

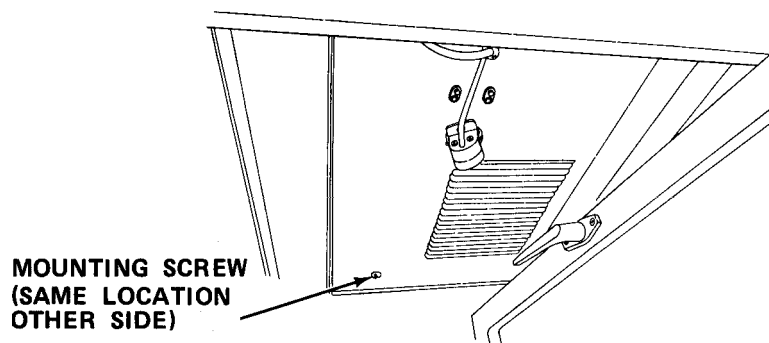
**WARNING**

Death or serious injury may occur from electrical shock unless power is turned off before servicing.

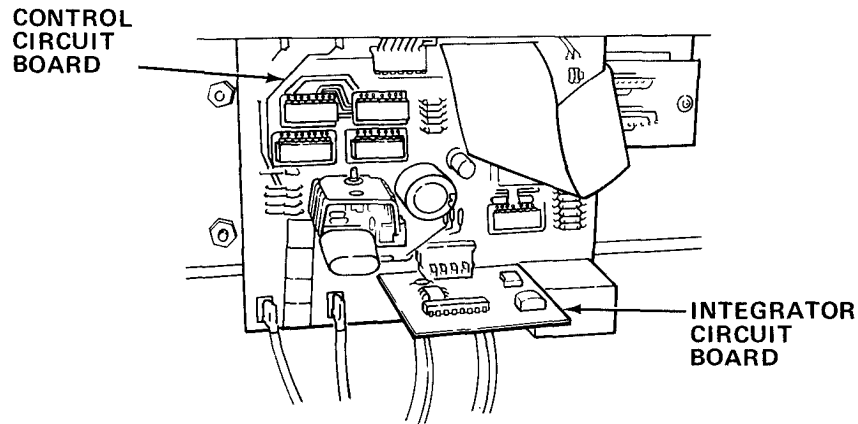
- a. Turn off power panel circuit breaker,



- b. Pull out frame release knob and flip glass frame into vertical position.



- c. Remove mounting screws for control panel.
- d. Carefully lift control panel from its mount to gain access to wiring.



- e. Carefully pull integrator circuit board from control circuit board.
- f. Tag and disconnect wires from control circuit board.

### **CAUTION**

The key pad may be adhered to back of nameplate. To prevent damage to equipment, remove timer plate mounting frame carefully.

### **NOTE**

Leave spacers on studs when removing timer plate mounting frame.

- g. Remove four self-locking nuts and timer plate mounting frame with circuit board attached.

### **NOTE**

Note how ribbon cable is installed prior to removal.

- h. Remove ribbon cable for digital displays from control circuit board.
- i. Press in on prongs on circuit board supports, and remove defective control circuit board.
- j. Carefully remove ribbon cable from underside of defective control circuit board.
- k. Carefully reinstall ribbon cable on underside of new control circuit board.
- l. Install new control circuit board onto supports and snap in place over prongs.

- m. Reinstall ribbon cable for digital display onto control circuit board as previously noted.
- n. Install timer plate mounting frame, with control circuit board attached. Secure with four self-locking nuts.
- o. Reconnect wiring to control circuit board.
- p. Install integrator circuit board onto control circuit board.
- q. Carefully lift control panel onto its mount.
- r. Reinstall mounting screws for control panel.
- s. Rotate glass frame into horizontal position, and lock into place with frame release knob.
- t. Turn on power panel circuit breaker.

2-20.3 Replace Digital Display Board (DD).

MOS: 35E, Special Electronic Devices Repairer

**TOOLS:**

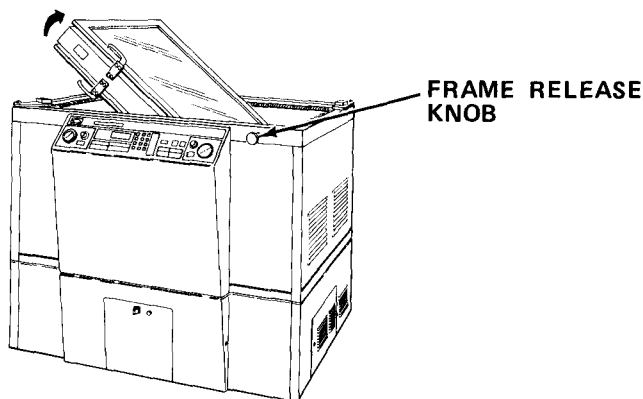
Tool Kit, Electronic Repair  
Flat Tip Screwdriver  
Hex Head Key Wrench Set  
Nut Driver Set

SUPPLIES: Digital Display Board

**WARNING**

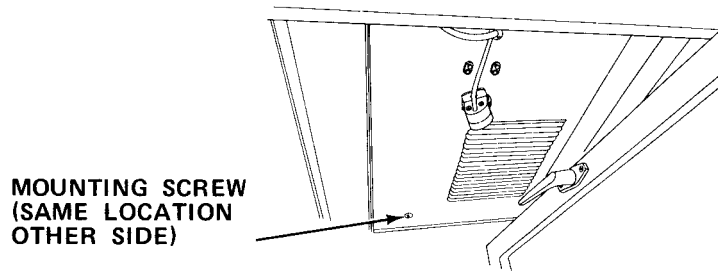
Death or serious injury may occur from electrical shock unless power is turned off before servicing.

- a. Turn off power panel circuit breaker.

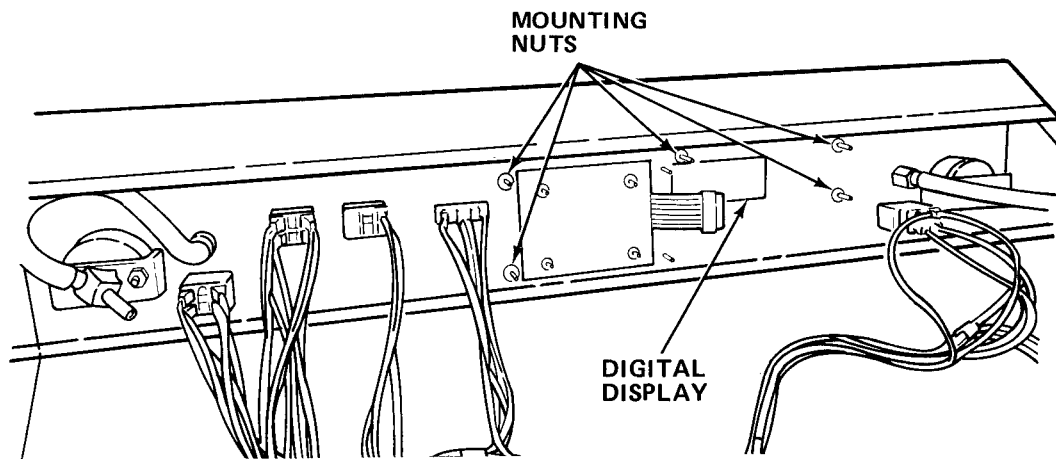




- b. Pull out frame release knob and flip glass frame into vertical position.



- c. Remove mounting screws for control panel.
- d. Carefully lift control panel from its mount to gain access to wiring.
- e. Carefully pull integrator circuit board from control circuit board.
- f. Tag and disconnect wires from control circuit board.



**CAUTION**

The key pad may be adhered to back of nameplate. To prevent damage to equipment, remove timer plate mounting frame carefully.

- g. Remove four self-locking nuts, spacers, and timer plate mounting frame with circuit board attached.

**NOTE**

Note how ribbon cable is installed prior to removal.

- h. Disconnect ribbon cable from digital display board.
- i. Press in on prongs on circuit board supports and remove defective control circuit board.

- j. Carefully remove ribbon cable from underside of control circuit board.
- k. Remove mounting bolts and defective digital display board.
- l. Install new digital display board and mounting bolts.
- m. Carefully reinstall ribbon cable on underside of control circuit board.
- n. Install control circuit board onto supports and snap in place over prongs.
- o. Reconnect ribbon cable onto digital display board.
- p. Reinstall spacers, timer plate mounting frame, and secure with self-locking nuts.
- q. Reconnect wires to control circuit board.
- r. Install integrator circuit board onto control circuit board.
- s. Carefully lift control panel onto its mount.
- t. Reinstall mounting screws for control panel.
- u. Rotate glass frame into horizontal position, and lock into place with frame release knob.
- v. Turn on power panel circuit breaker.

2-20.4 Replace Keypad (KP).

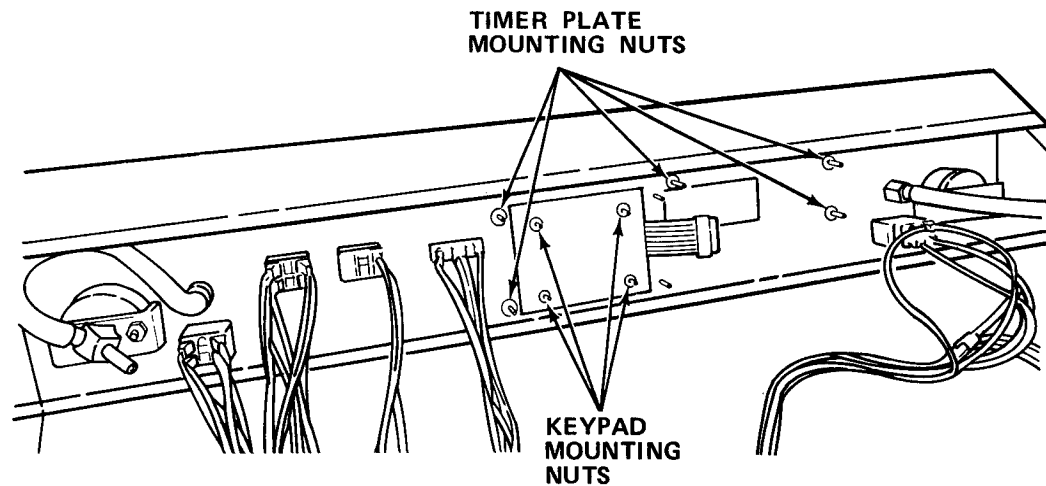
MOS: 35E, Special Electronic Devices Repairer

TOOLS :

Tool Kit, Electronic Repair  
Flat Tip Screwdriver  
Hex Head Key Wrench  
Nut Driver Set

SUPPLIES: Monoswitch Keypad

- a. Perform steps a-j of paragraph 2-20.2 to remove control circuit board.



- b. Remove four nuts, spacers and carefully remove defective keypad and ribbon cable.
- c. Carefully install new keypad and ribbon cable and mount in place with nuts and spacers.
- d. Carefully reinstall ribbon cable on underside of control circuit board.
- e. Install control circuit board onto supports and snap in place over prongs.
- f. Reconnect ribbon cable onto digital display board.
- g. Reinstall timer plate mounting frame, spacers and nuts.
- h. Carefully lift control panel onto its mount.
- i. Reinstall mounting screws for control panel.
- j. Rotate glass frame into horizontal position and lock into place with frame release knob.
- k. Turn on power panel circuit breaker.

2-20.5 Replace 3kW Power Supply Circuit Board (PS1).

MOS: 35E, Special Electronic Devices Repairer

TOOLS:

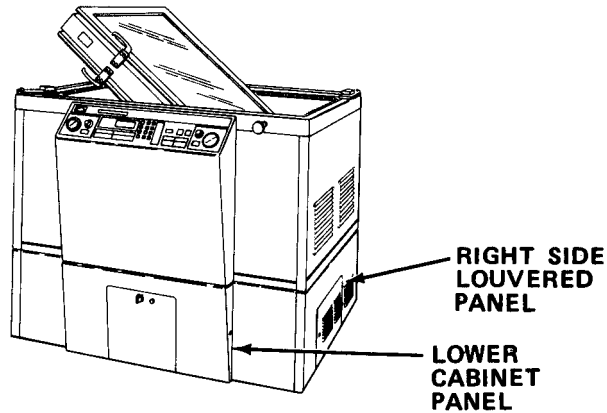
Tool Kit, Electronic Repair  
Flat Tip Screwdriver  
Hex Head Key Wrench Set  
Slip Joint Pliers

SUPPLIES: 3kW 100 V Circuit Board

WARNING

Death or serious injury may occur from electrical shock unless power is turned off before servicing.

- a. Turn off power panel circuit breaker.

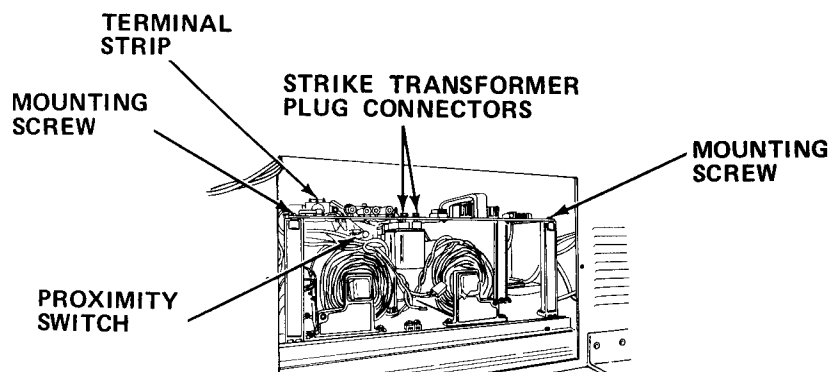


- b. Remove two screws and lower cabinet panel.
- c\* Remove two screws and right side lowered panel.
- d. Remove two hex head screws, flat washers, and star washers from base of power supply.
- e. Tag and disconnect top overtemperature switch leads from each strike transformer.
- f. Tag and disconnect wires from terminals 1 through 5 on autoformer terminal strip.

CAUTION

Power supply now remains wired in back by two power cables only. Remove power supply carefully to prevent damage to equipment.

- g. Maneuver power supply carefully out of platemaker, and position on floor.



- h. Tag and disconnect wires from power supply terminal strip.
- i. Tag and disconnect plug connectors for strike transformers.
- j. Tag and disconnect wires for strike transformer #2 proximity switch.
- k. Remove mounting screws and wire retaining clips for circuit board, and remove defective 3kW power supply circuit board.
- l. Remove strike transformer #2 proximity switch from defective power supply circuit board.
- m. Install strike transformer #2 proximity switch on new power supply circuit board.
- n. Install new 3kW power supply circuit board, mounting screws, and wire retaining clips onto supports.
- o. Reconnect wires for strike transformer #2 proximity switch.
- p. Reconnect plug connectors for strike transformers.
- q. Reconnect wires to power supply terminal strip.
- r. Carefully reposition power supply in platemaker.
- s. Reconnect wires on terminals 1 through 5 on autoformer terminal strip.
- t. Reconnect top overtemperature switch leads to each strike transformer.
- u. Secure power supply to platemaker chassis with two hex head screws, flat washers, and star washers.
- v. Reinstall right side lowered panel.
- w. Reinstall lower cabinet panel.
- x. Turn on power panel circuit breaker.

2-20.6 Replace Strike Transformer (ST-1 or 2)

MOS: 35E, Special Electronic Devices Repairer

TOOLS:

Tool Kit, Electronic Repair  
Flat Tip Screwdriver  
Hex Head Key Wrench Set  
Slip Joint Pliers

SUPPLIES: 3kW Strike Transformer

**WARNING**

Death or serious injury may occur from electrical shock unless power is turned off before servicing.

- a. Perform steps a-k of paragraph 2-20.5 to remove 3kW power supply circuit board.
- b. Tag and disconnect wires for defective strike transformer.
- c. Loosen mounting screws for both high voltage and coil insulator brackets, and remove defective strike transformer.
- d. Install new strike transformer onto high voltage and coil insulator brackets and tighten mounting screws.
- e. Reconnect wires for new strike transformer that was removed in step b.
- f. Perform steps n-x of paragraph 2-20.5 to install 3kW power supply circuit board.

2-20.7 Replace Strike Transformer Overtemperature Switch (THS1 or THS2)

MOS: 35E, Special Electronic Devices Repairer

TOOLS:

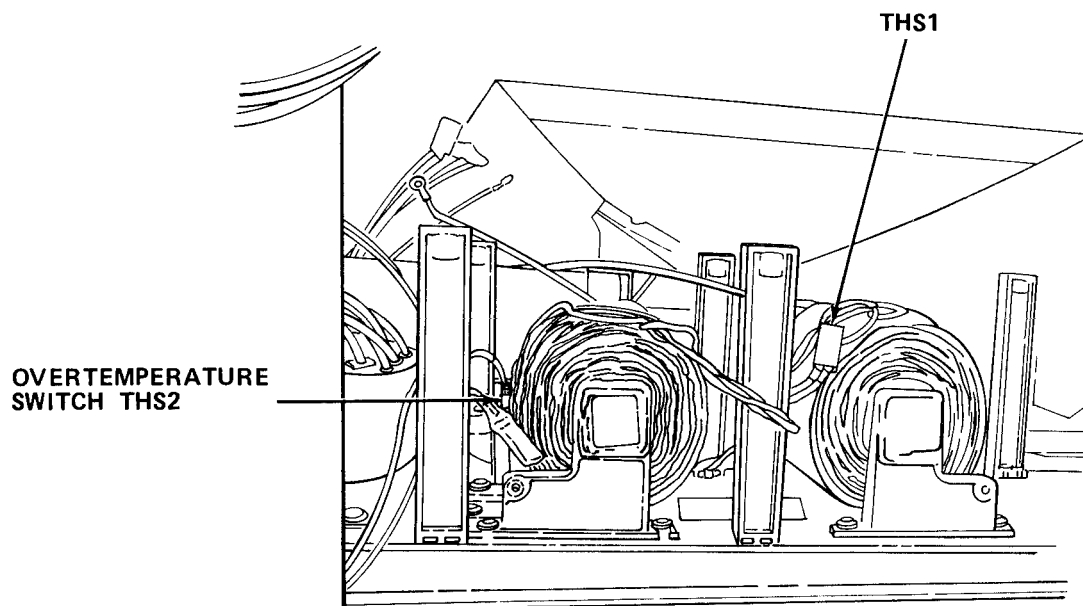
Tool Kit, Electronic Repair  
 Flat Tip Screwdriver  
 Hex Head Key Wrench Set  
 Slip Joint Pliers

SUPPLIES: 200°F Thermostat Switch

**WARNING**

Death or serious injury may occur from electrical shock unless power is turned off before servicing.

- a. Perform steps a-k of paragraph 2-20.5 to remove 3kW power supply circuit board.

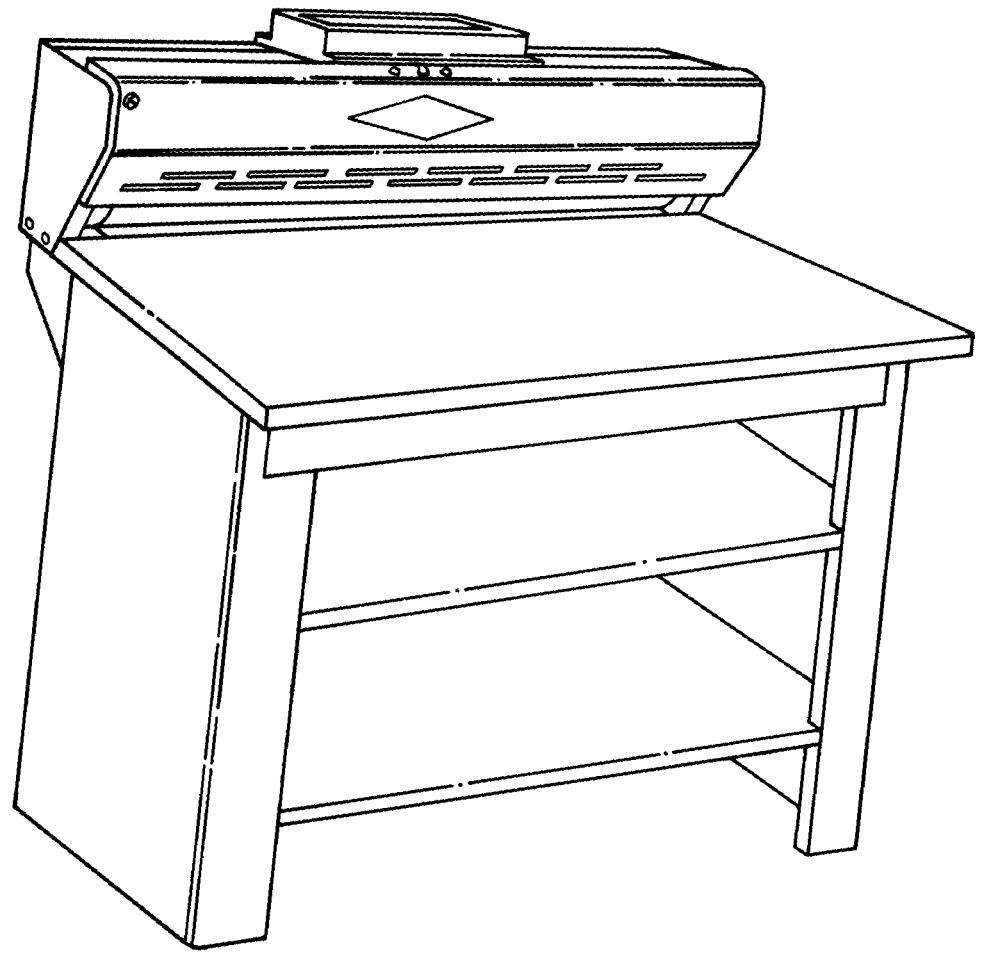


- b. Tag and disconnect wires for defective overtemperature switch.
- c. Remove mounting bolts and defective overtemperature switch.
- d. Install new overtemperature switch and mounting bolts.
- e. Reconnect wires for new overtemperature switch.
- f. Perform steps n-x of paragraph 2-20.5 to reinstall 3kW power supply circuit board.









## CHAPTER 3

## PLATE FINISHING TABLE

## Section I. INTRODUCTION

## 3-1. GENERAL INFORMATION.

3-1.1 Scope.

- a. Model Number and Equipment Name. Model RUB40 Plate Finishing Table.
- b. Purpose of Equipment. To provide user with a clean work surface, and a drying flow of air for developing, gumming, and finishing of presensitized and wipe-on printing plates.

## 3-2. EQUIPMENT DESCRIPTION.

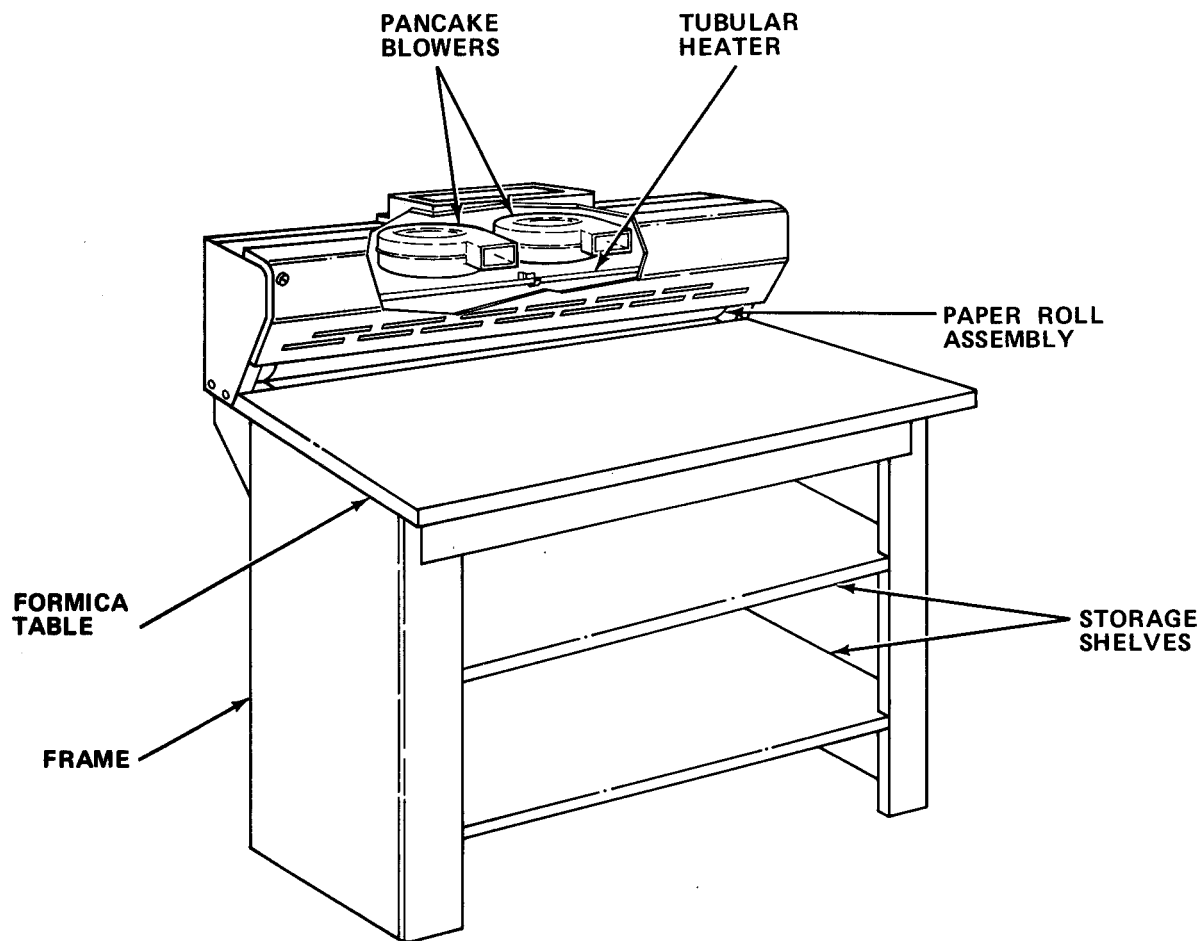
3-2.1 Equipment Characteristics, Capabilities, and Features.

- a. Built-in blowers provide an even flow of air over entire table surface to speed drying.
- b. Built-in electric heater aids speed drying process.

Formica top is protected by kraft paper fed from a built-in dispenser to provide a clean work surface for each plate.

- d. Sturdy, all welded steel base and storage shelves.

3-2.2 Location and Description of Major Components.



FRAME ASSEMBLY. Supports table top, blowers and heater housing, and steel shelves.

FORMICA TABLE. Provides a smooth working surface.

PAPER ROLL ASSEMBLY. Consists of a heavy duty kraft paper roll mounted on a dowel for ease of dispensing.

PANCAKE BLOWERS. Consist of two pancake type blowers which provide flow of air directed to table through housing.

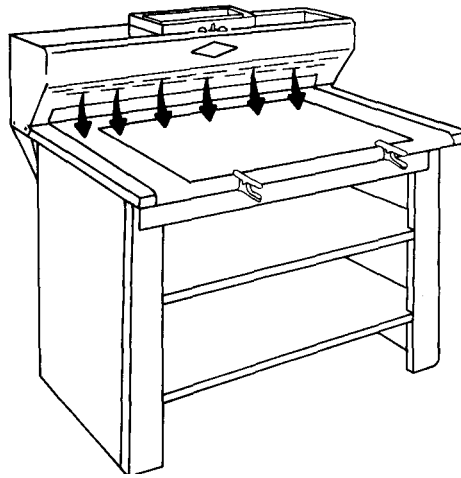
TUBULAR HEATER. Mounted lengthwise along housing to provide a heat source.

STORAGE SHELVES. Consist of two steel shelves for storage purposes.

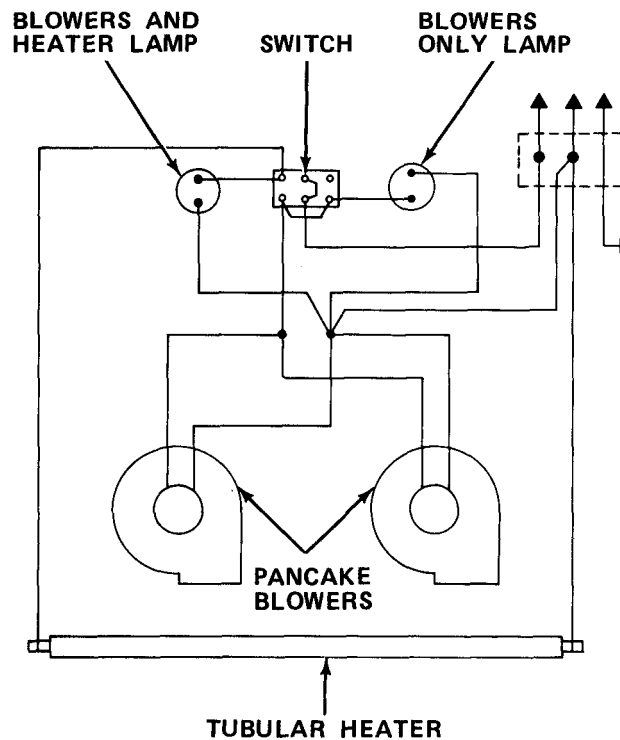
3-2.3 Equipment Data.

Power Requirements	115 V, 60 Hz, 12 Amps
Finishing Surface Working Area	28.0 in. x 40.0 in. (71.0 cm x 102.0 cm)
Dimensions	
Width	40.0 in. (102.0 cm)
Depth	34.5 in. (87.6 cm)
Height (to table top) (to housing top)	36.0 in. (91.4 cm) 51.5 in. (130.8 cm)
Blower Motors	
Power Requirements	115 V, 60 Hz, .58 Amps
Max Ambient Temperature	105°F (40.5°C)
Horsepower	<b>1/100</b> Hp
Speed	<b>1530</b> RPM
Tubular Heater	
Power Requirement	115 V, 60 Hz, 10.9 Amps
Power Dissipation	1250 Watts

### 3-3. TECHNICAL PRINCIPLES OF OPERATION.



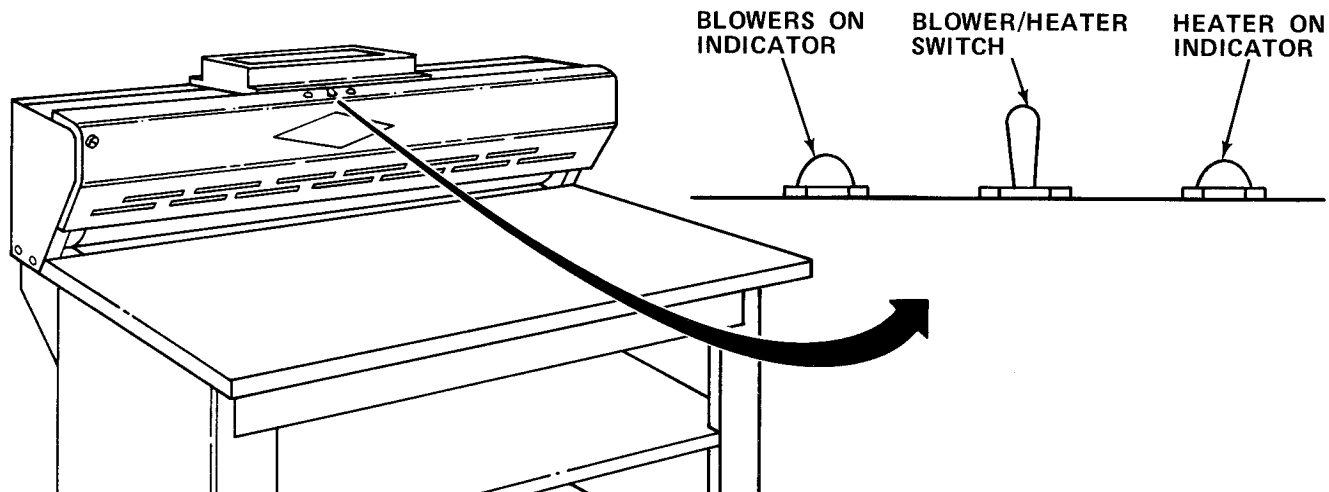
3-3.1 General. The blowers and tubular heater provide a constant flow of warm air over entire table work surface. With the use of the kraft roll paper, easy cleanup is achieved.



3-3.2 Electrical System. Provides power to the pancake blowers and the tubular heater. Control switch is a double-pole, double-throw type switch. In the center position, no power is supplied to the blowers or the tubular heater. With the switch in the-blowers only position, power is sent to the blowers and to the blowers only light. With the switch in the heater and blower position, power is provided to both the blowers and heater. All components in the electrical system use 115 V 60 Hz power.

Section II. OPERATING INSTRUCTIONS

3-4. DESCRIPTION AND USE OF OPERATOR'S CONTROLS AND INDICATORS.



CONTROL OR INDICATOR

FUNCTION

Blower/Heater Switch

In left position, allows only the blowers to operate. In right position, allows the blowers and heater to operate.

Blowers On Indicator

When lit, indicates power is supplied to blowers.

Heater On Indicator

When lit, indicates power is supplied to heater.

3-5. OPERATOR PREVENTIVE MAINTENANCE CHECKS AND SERVICES.

a. Before You Operate. Always keep in mind the WARNINGS and CAUTIONS. Perform your before (B) PMCS.

b. While You Operate. Always keep in mind the WARNINGS and CAUTIONS. Perform your during (D) PMCS.

c. After You Operate. Be sure to perform your after (A) PMCS.

d. If Your Equipment Fails to Operate. Troubleshoot with proper equipment. Report any deficiencies using the proper forms. See DA Pam 738-750.

3-5.1 PMCS Procedures.

- a. PMCS are designed to keep the equipment in good working condition by performing periodic service tasks.
- b. Service intervals provide you, the operator, with time schedules that determine when to perform specified service tasks.
- c. The "Equipment is Not Ready/Available **If**" column is used for identification of conditions that make the equipment not ready/available for readiness reporting purposes or denies use of the equipment until corrective maintenance is performed.
- d. If your equipment fails to operate after PMCS is performed, immediately report this condition to your supervisor.
- e. Perform weekly as well as before operation if you are the assigned operator and have not operated the item since the last weekly or if you are operating the item for the first time.
- f. Item number column. Item numbers are assigned in chronological ascending sequence regardless of interval designation. These numbers are used for your "TM Number" column on DA Form 2404, Equipment Inspection and Maintenance Worksheet in recording results of PMCS.
- g. Interval column. This column determines the time period designated to perform your PMCS.
- h. Item to be inspected and procedures column. This column lists functional groups and their respective assemblies and subassemblies as shown in the Maintenance Allocation Chart (Appendix B). The appropriate check or service procedure follows the specific item to be inspected.
- i. Equipment is not ready/available if: column. This column indicates the reason or cause why your equipment is not ready/available to perform its primary mission.
- j. List of tools and materials required for PMCS is as follows:

<u>Item</u>	<u>Quantity</u>
General Purpose Detergent ( <b>Item</b> 10, Appendix E)	ar
Cheesecloth (Item 7, Appendix E)	ar



Table 3-1. OPERATOR PREVENTIVE MAINTENANCE CHECKS AND SERVICES

NOTE

If the equipment must be kept in continuous operation, check and service only those items that can be checked and serviced without disturbing operation. Make the complete checks and services when the equipment can be shut down.

B - Before                      W - Weekly                      AN - Annually                      (Number) - Hundreds of Hours  
 D - During                      M - Monthly                      S - Semiannually  
 A - After                      Q - Quarterly                      BI - Biennially

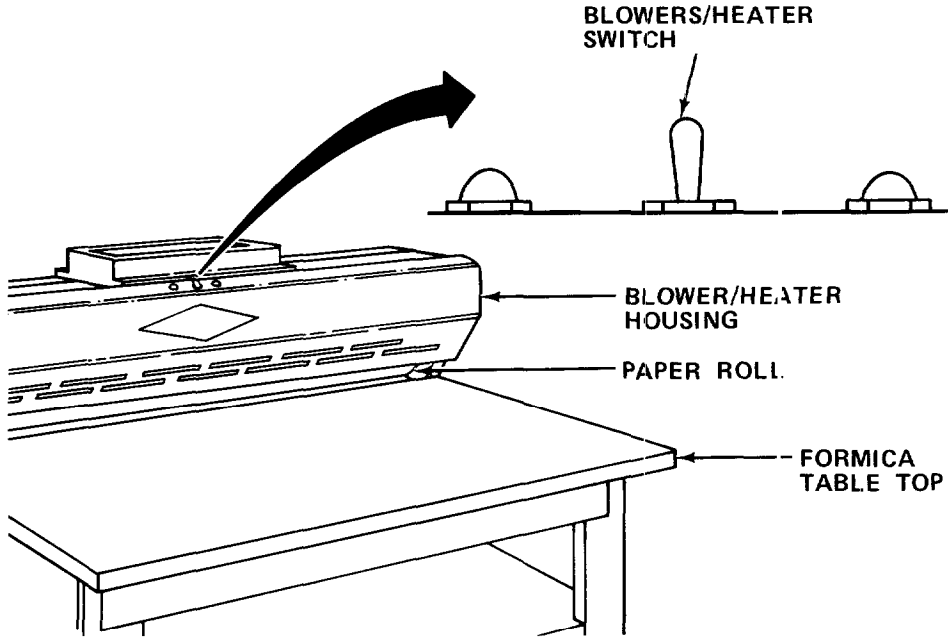
ITEM NO.	INTERVAL	ITEM TO BE INSPECTED  PROCEDURE	For Readiness Reporting, Equipment Is Not Ready/ Available If:
1	B/D	<p><u>PLATE FINISHING TABLE.</u></p> <p><u>Inspect.</u></p>  <ol style="list-style-type: none"> <li>1. Place blowers/heater switch to center position.</li> <li>2. Inspect formica table top for cracks or deep scratches which may affect operation.</li> <li>3. Inspect blowers/heater housing for dents or missing parts (bolts, screws, etc.).</li> <li>4. Place blowers/heater switch to left and verify blowers turn on and no heat is produced.</li> </ol>	<p>Dents or missing parts.</p> <p>Blowers fail to operate and/or heat is produced.</p>

Table 3-1. OPERATOR PREVENTIVE MAINTENANCE CHECKS AND SERVICES -Cont

B - Before                      W - Weekly                      AN - Annually                      (Number) - Hundreds of Hours  
 D- During                      M - Monthly                      S - Semiannually  
 A - After                      Q - Quarterly                      BI - Biennially

ITEM NO.	INTERVAL	ITEM TO BE INSPECTED  PROCEDURE	For Readiness Reporting, Equipment Is Not Ready/ Available If:
1	B/D	<p><u>PLATE FINISHING TABLE -Cont</u></p> <p><u>Inspect - Cent</u></p> <p>5. Place blowers/heater switch to right and verify blowers turn on and heat is produced.</p> <p>6. Place blowers/heater switch to center position and verify blowers and heater turn off.</p> <p>7. Inspect paper roll and verify sufficient kraft paper is available.</p>	<p>Blowers fail to operate and/or heat is not produced.</p> <p>Blowers remain on and/or heater does not turn off.</p> <p>Quantity of paper insufficient.</p>
2	B/A	<p><u>Clean.</u></p> <p style="text-align: center;"><b><u>WARNING</u></b></p> <p>Death or serious injury may occur from electrical shock unless power cord is unplugged before servicing.</p> <p>1. Place blowers/heater switch to center position.</p>	

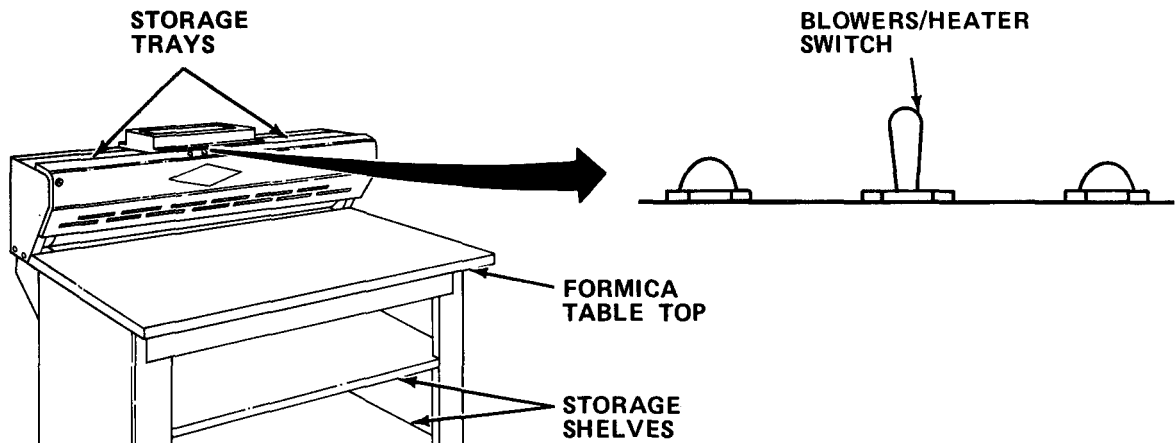


Table 3-1. OPERATOR PREVENTIVE MAINTENANCE CHECKS AND SERVICES - Cont

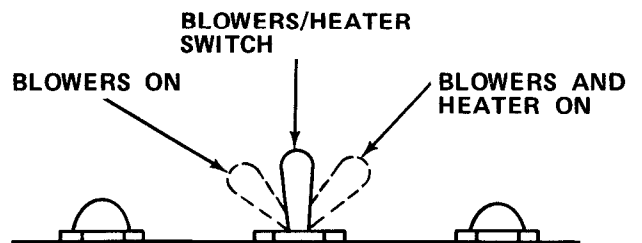
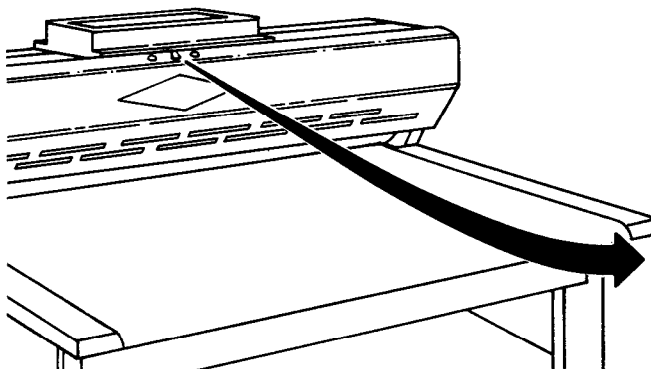
B - Before                      W - Weekly                      AN - Annually                      (Number) - Hundreds of Hours  
 D - During                      M - Monthly                      S - Semiannually  
 A - After                      Q - Quarterly                      BI - Biennially

ITEM NO.	INTER-VAL	ITEM TO BE INSPECTED  PROCEDURE	For Readiness Reporting, Equipment Is Not Ready/ Available If:
2	B/A	<p><u>PLATE FINISHING TABLE -Cont</u></p> <p><u>Clean - Cent</u></p> <ol style="list-style-type: none"> <li>2. Unplug power cord.</li> <li>3. Wipe formica table top surface with cheesecloth moistened in mild solution of detergent and water to remove all stains.</li> <li>4. Wipe formica table top surface dry with cheesecloth to remove streaks and smears.</li> <li>5. Wipe remaining surfaces, storage tray, blowers/heater housing, and storage shelves clean with damp cheesecloth.</li> <li>6. Plug in power cord.</li> </ol>	

**3-6. OPERATION UNDER USUAL CONDITIONS.**

**3-6.1 Assembly and Preparation for Use.**

- a. Perform before operation PMCS.
- b. Plug in power cord.

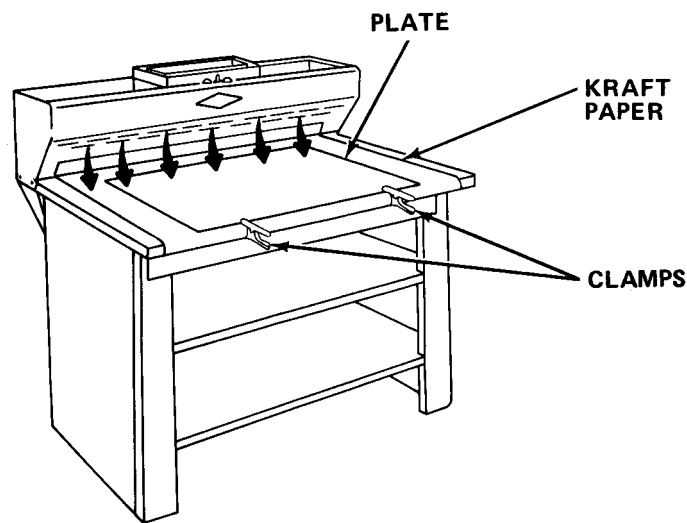


- c. Place power switch in desired operating position, either blowers on, or blowers and heater on.

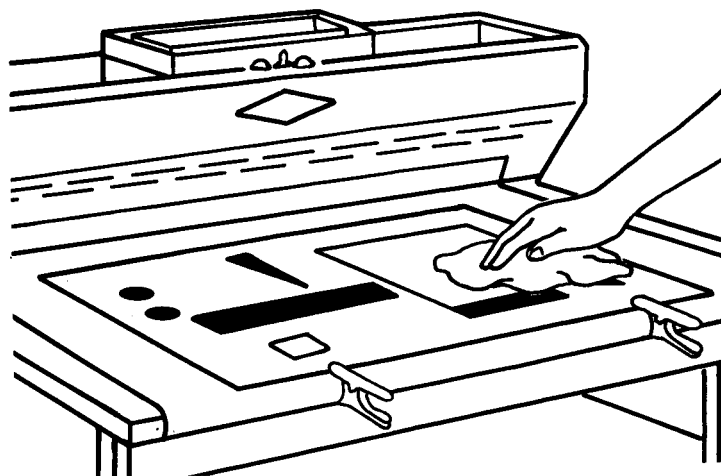
3-6.2 Operating Procedures.

**NOTE**

- Follow the plate manufacturer's directions for developing the specific type of plate being used.
  - The developing process is performed in the sink. Most plates need a plate developer solution applied to the plate surface.
- a. Remove the developed plate and set plate on the kraft paper.



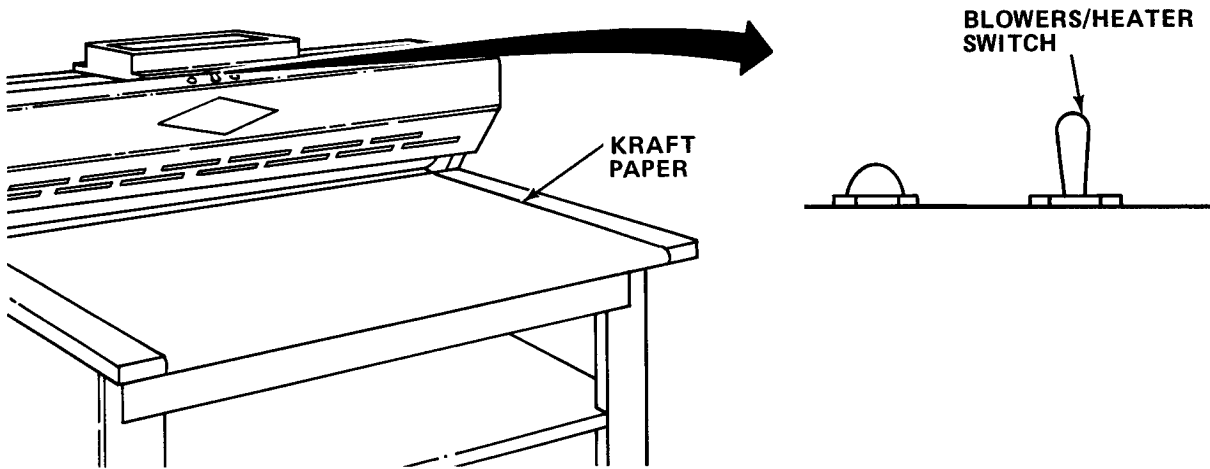
- b. Place clamps over end of formica table top so kraft paper and plate are fastened to table.
- c. Allow time for plate to dry completely before continuing.



- d. After the plate has dried, apply a small amount of special gum solution to the entire plate surface using a soft, clean cellulose sponge.
- e. Polish the gum dry with clean, soft cheesecloth.
- f. The plate is now ready for storage or the press.
- g. Clean the formica tabletop and remove kraft paper that was used during the gumming process.
- h. **If** more plate processing is desired, repeat steps a-g.
- i. If processing has been completed, perform your after operation PMCS (Table 3-1).

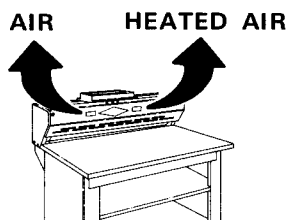
3-6.3 Preparation for Movement.

- a. Place power switch in center position.



- b. Remove and discard kraft paper from table surface.
- c. Perform after operation PMCS.
- d. Remove and store all loose items.

3-6.4 Operating Instructions on Decals and Instruction Plates.



3-7. OPERATION UNDER UNUSUAL CONDITIONS. This equipment is designed for operation only in a controlled environment.

Section III. OPERATOR MAINTENANCE

3-8. LUBRICATION INSTRUCTIONS. This equipment does not require lubrication at the operator level of maintenance.

3-9. TROUBLESHOOTING PROCEDURES.

a. The table lists the common malfunctions which you may find during the operation or maintenance of the plate finishing table, or its components. You should perform the test/inspections and corrective actions in the order listed.

b. This manual cannot list all malfunctions that may occur, nor all test or inspections and corrective actions. If a malfunction is not listed or is not corrected by listed corrective actions, notify your supervisor.

Table 3-2. TROUBLESHOOTING

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
1. PLATE FINISHING TABLE WILL NOT ENERGIZE.		
	Step 1. Check that power cord is plugged in.	
	(a) If power cord is plugged in, proceed to step 2.	
	(b) Plug in power cord.	
	Step 2. Check position of power panel circuit breaker.	
	(a) Reset circuit breaker.	
	(b) If problem persists, notify your supervisor.	

3-100 MAINTENANCE PROCEDURES.

a. This section contains instructions covering operator maintenance functions for the plate finishing table. Personnel required are listed only if the task requires more than one.

b. After completing each maintenance procedure, perform operational check to be sure that equipment is properly functioning.

INDEX

PROCEDURE	PARAGRAPH
Replace Kraft Paper Roll . . . . .	3-10.1

3-10.1 Replace Kraft Paper Roll.

MOS: 83E, Photo and Layout Specialist

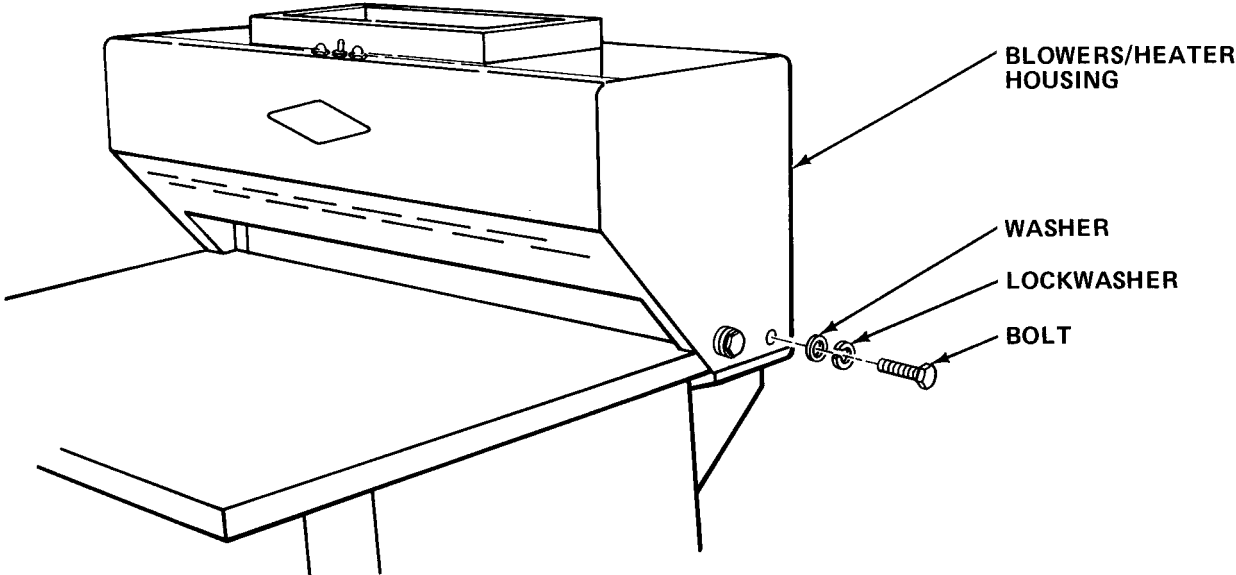
TOOLS: 9/16 in. Wrench

SUPPLIES: Kraft Paper Roll (Item 33, Appendix E)

WARNING

Death or serious injury may occur from electrical shock unless power cord is unplugged before servicing.

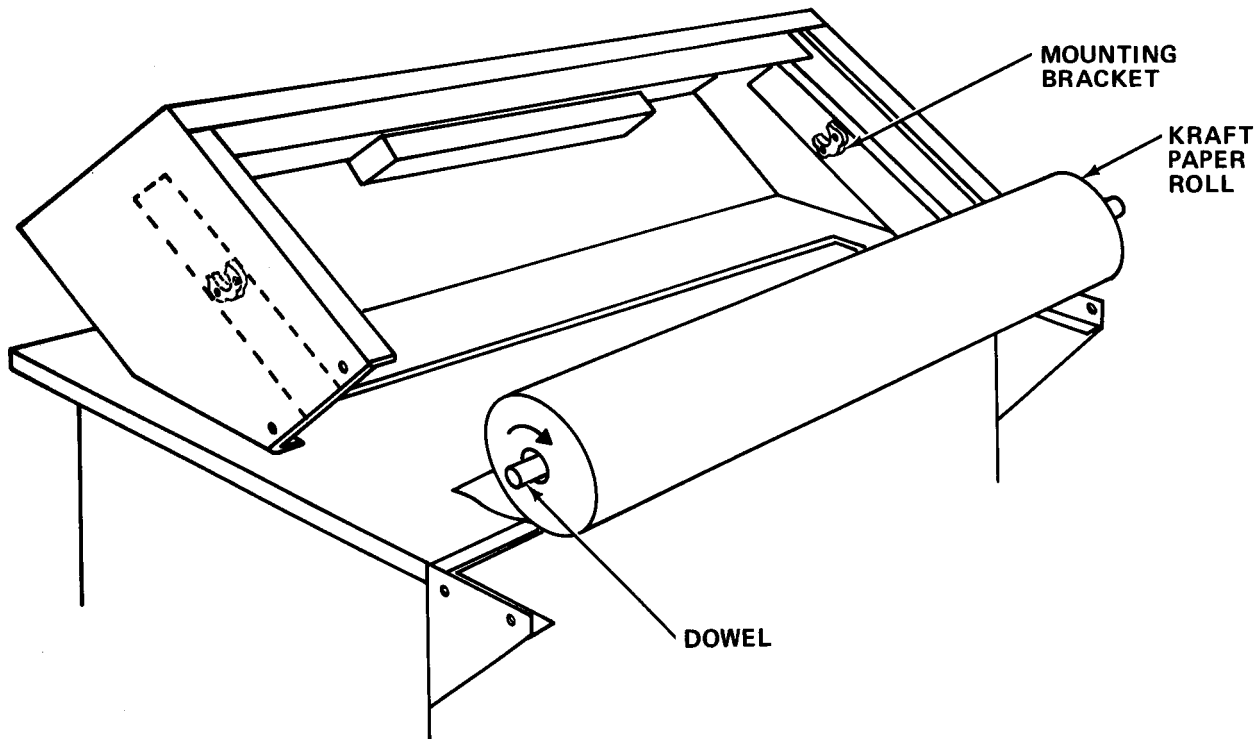
- a. Unplug power cord.



CAUTION

Prior to removing last bolt on blower/heater housing, hold housing in place with one hand to prevent housing from tipping over.

- b. Remove four bolts, washers, and lockwashers from blower/heater housing.



- c. Carefully lay blowers/heater housing across formica table top.
- d. Remove old kraft paper roll and dowel from its mounting brackets.
- e. Remove dowel from old paper roll and insert through new paper roll.

**NOTE**

Ensure that kraft paper dispenses from bottom of roll.

- f. Install new kraft paper roll and dowel onto brackets in blowers/heater housing.
- g. Carefully lift blowers/heater housing back into place on mounting braces.
- h. Reinstall four bolts, washers, and lockwashers to reattach housing to mounting braces.
- i. Plug in power cord.



## Section IV. ORGANIZATIONAL MAINTENANCE

## 3-11. LUBRICATION INSTRUCTIONS.

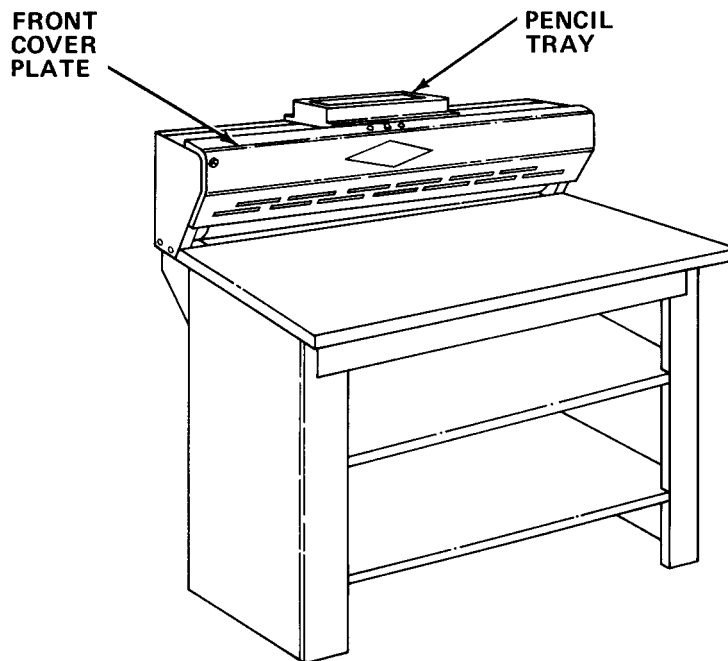
## NOTE

These lubrication instructions are mandatory.

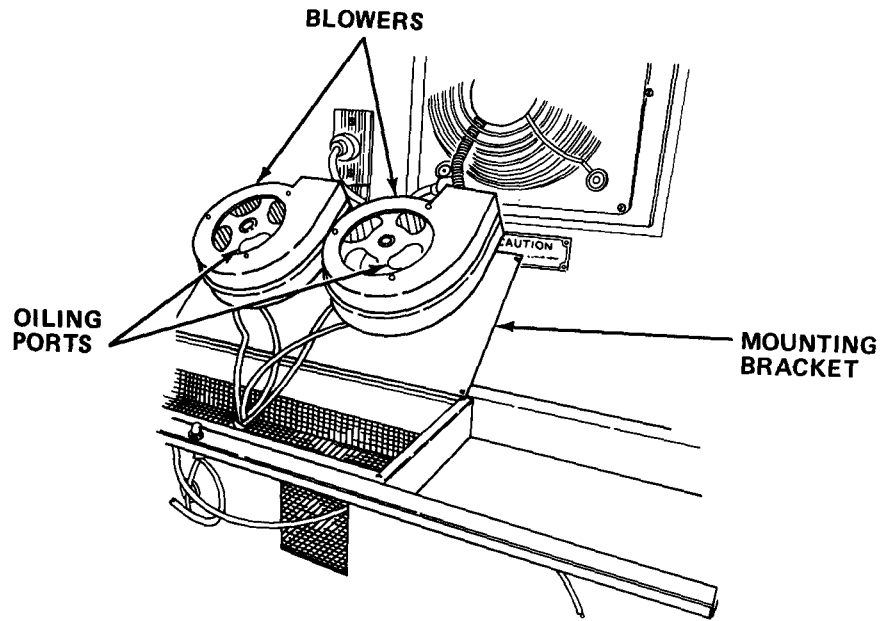
## 3-11.1 Lubricate pancake blowers semiannually as follows:

WARNING

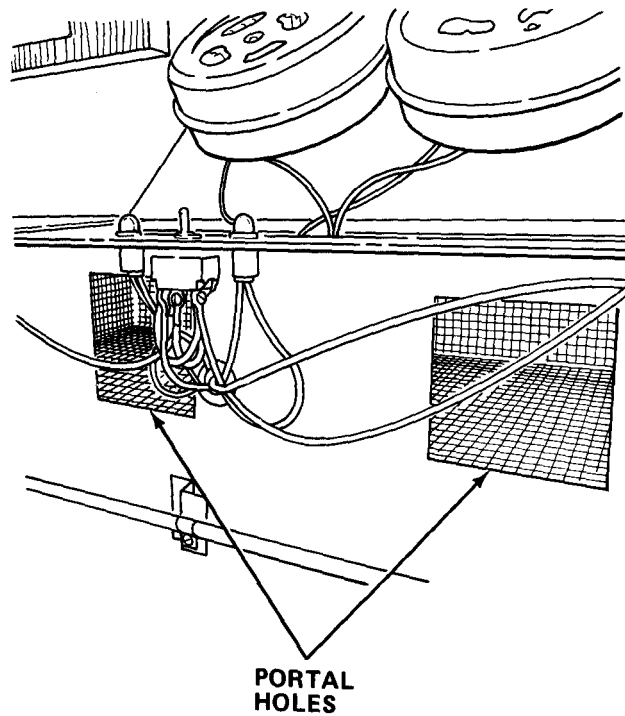
Death or serious injury may occur from electrical shock unless power cord is unplugged before servicing.

**a. Unplug power cord.**

- b. Remove fourteen screws attaching front cover plate and remove plate.
- c. Remove six screws attaching pencil tray to blower/heater housing and remove tray.



- d. Carefully lift motor mounting bracket clear of housing and set to one side.
- e. Locate oiling ports for motors and apply two drops of SAE 20 oil into each port,



- f. Carefully reinstall blowers and blower mounting plate so that blowers' exhausts fit through portal holes of frame. Aline all screw holes on top.
- g. Reinstall six screws and pencil tray to blowers/heater housing.
- h. Reinstall fourteen screws and front cover plate to housing.
- i. Plug in power cord.
- j. Place blowers/heater switch to left and allow blowers to run for one minute.
- k. Place blowers/heater switch to center position.
- l. Unplug power cord.

### 3-12. REPAIR PARTS, SPECIAL TOOLS; TEST, MEASUREMENT, AND DIAGNOSTIC EQUIPMENT (TMDE) ; AND SUPPORT EQUIPMENT.

3-12.1 Common Tools and Equipment. For authorized common tools and equipment, refer to the Modified Table of Organization and Equipment (MTOE) applicable to your unit.

3-12.2 Special Tools; Test, Measurement, and Diagnostic Equipment; and Support Equipment. Special Tools, TMDE, and Support Equipment is listed in the applicable repair parts and special tools list and in Appendix B of this manual.

3-12.3 Repair Parts. Repair parts are listed and illustrated in the Repair Parts and Special Tools List, TM 5-3610-259-24P covering organizational maintenance for this equipment.

### 3-13. SERVICE UPON RECEIPT.

#### 3-13.1 Check Unpacked Equipment.

Inspect the equipment for damage incurred during shipment. **If** equipment has been damaged, report the damage on DD form 6, Packing Improvement Report.

b. Check the equipment against the packing list to see if the shipment is complete. Report all discrepancies in accordance with the instructions of DA Pam 738-750.

c. Check to see whether the equipment has been modified.

3-14. ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES.

a. PMCS are designed to keep the equipment in good working condition by performing certain tests, inspections, and services. The intervals provide you, the organizational technician, with time schedules that determine when to perform specified tasks.

b. Item number column. Item numbers are assigned in chronological ascending sequence regardless of interval designation. These numbers are used for your "TM Number" column on DA Form 2404, Equipment Inspection and Maintenance Worksheet, in recording the results of PMCS.

c. Interval column. This column determines the time period designated to perform your PMCS.

d. Item to be inspected and procedures column. This column lists functional groups and their respective assemblies and subassemblies as shown in the Maintenance Allocation Chart (Appendix B). The appropriate checker service procedure follows the specific item to be inspected.

e. List of tools and materials required for PMCS is as follows:

<u>Item</u>	<u>Quantity</u>
Vacuum Cleaner	1 ea

Table 3-3. ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES

Before W - Weekly AN - Annually (Number) - Hundreds of Hours  
 During M - Monthly S - Semiannually  
 After Q - Quarterly BI - Biennially

ITEM NO.	INTERVAL	ITEM TO BE INSPECTED  PROCEDURE
1	M	<p><u>PLATE FINISHING TABLE.</u></p> <p><u>Service Blowers/Heater Housing.</u></p> <p style="text-align: center;"><u>WARNING</u></p> <p>Death or serious injury may occur from electrical shock unless power cord is unplugged before servicing.</p> <p>1. Unplug power cord,</p>

Table 3-3. ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES - Cont

B - Before                      W - Weekly                      AN - Annually                      (Number) - Hundreds of Hours  
 D - During                      M - Monthly                      s - Semiannually  
 A - After                      CI - Quarterly                      BI - Biennially

ITEM NO.	INTERVAL	ITEM TO BE INSPECTED  PROCEDURE
1	M	<p><u>PLATE FINISHING TABLE - Cont</u></p> <p><u>Service Blowers/Heater Housing - Cont</u></p> <div> <p>A perspective view of a rectangular metal housing. Two arrows point to the top center area labeled 'BLOWERS' EXHAUSTS'. Another arrow points to the right side of the housing labeled 'TUBULAR HEATER'.</p> </div> <ol style="list-style-type: none"> <li>2. Remove blowers/heater housing front panel.</li> <li>3. Using a vacuum cleaner, carefully vacuum areas around tubular heater and blowers' exhausts.</li> </ol> <div> <p>A perspective view of the blower housing with the front panel removed. A vacuum hose is shown connected to the bottom of the housing. An arrow points to a rectangular mesh screen located under the blower area, labeled 'SCREEN'.</p> </div> <ol style="list-style-type: none"> <li>4. Using vacuum cleaner, vacuum screening under blowers.</li> <li>5. Reinstall blowers/heater housing front panel.</li> <li>6. Plug in power cord.</li> </ol>

3-15. ORGANIZATIONAL TROUBLESHOOTING PROCEDURES.

a. Organizational troubleshooting procedures cover the most common malfunctions that may be repaired at the organizational level. Repair or adjustment requiring specialized equipment is not authorized unless such equipment is available. Troubleshooting procedures used by the operator should be conducted in addition to the organizational troubleshooting procedures.

b. This manual cannot list all the possible malfunctions or every possible test/inspection and corrective action. If a malfunction is not listed or is not corrected by a listed corrective action, notify your supervisor.

c. For unidentified malfunctions, use the following schematic for further fault analysis.

d. **If** the plate finishing table does not power-up when turned on, verify that 120 V ac is present at the receptacle. **If** voltage is not present, plug equipment into receptacle with power available and proceed with equipment troubleshooting. Perform no-power troubleshooting procedures for dead receptacle (Table 1-4).

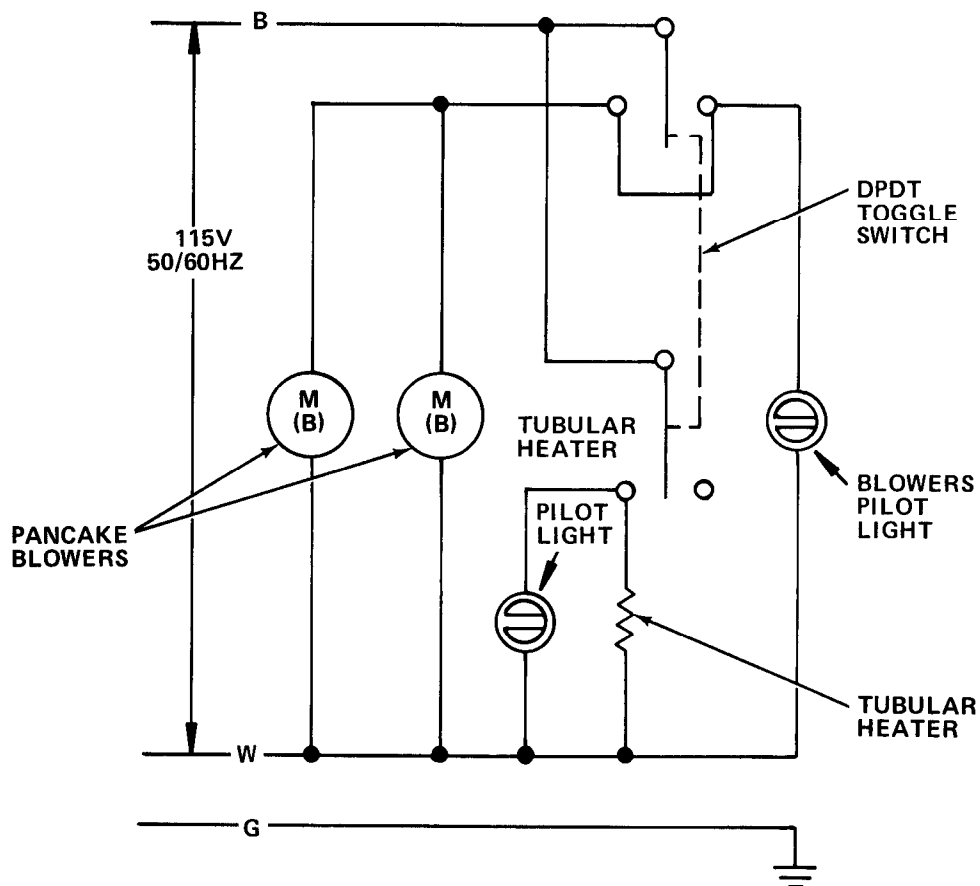


Table 3-4. ORGANIZATIONAL TROUBLESHOOTING

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
-------------	--------------------	-------------------

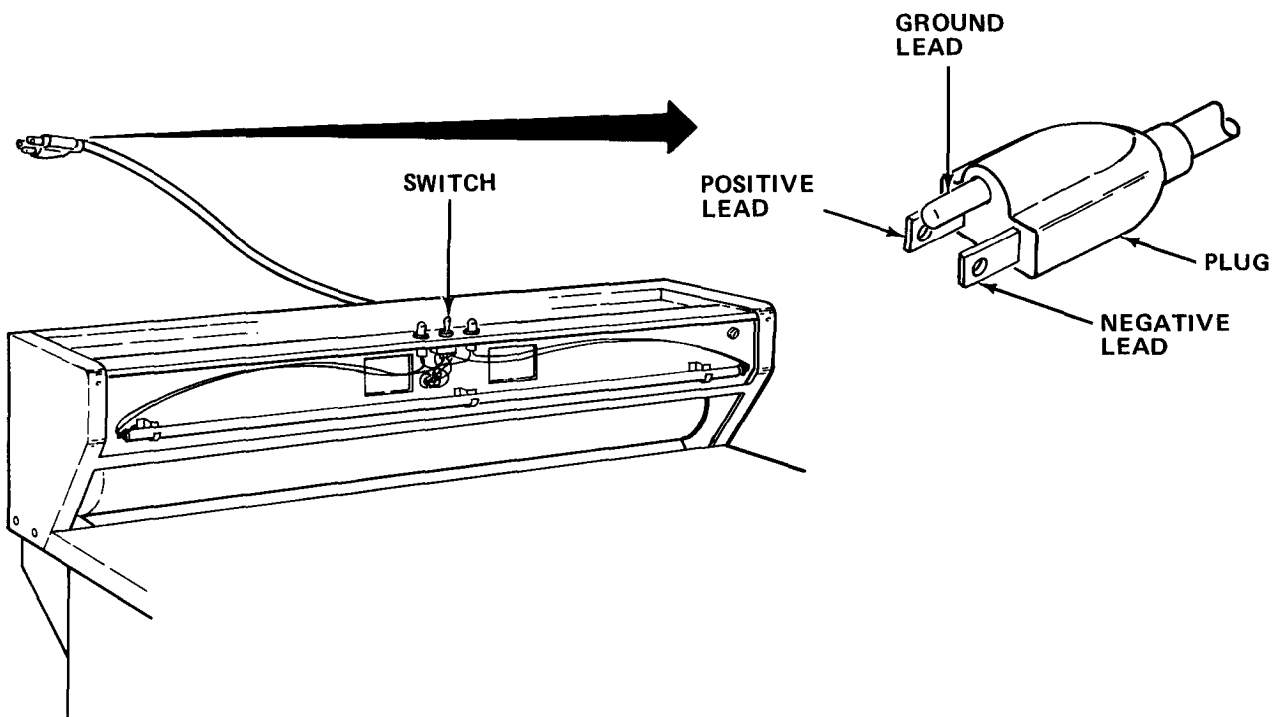
1. PLATE FINISHING TABLE WILL NOT ENERGIZE.

Step 1. Check continuity of power cord as follows:

**WARNING**

Death or serious injury may occur from electrical shock unless power cord is unplugged before servicing.

- (a) Unplug power cord.
- (b) Remove blowers/heater housing front panel.



(c) Check between positive lead of plug and center post on switch for zero ohms resistance.

Table 3-4. ORGANIZATIONAL TROUBLESHOOTING - Cont

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
-------------	--------------------	-------------------

1. PLATE FINISHING TABLE WILL NOT ENERGIZE - Cont

- (d) Check between negative lead of plug and right side of tubular heater for zero ohms resistance.
- (e) Check between ground lead of plug and brass screwhead (chassis ground) next to input wires, for zero ohms resistance.
  - (1) If all checks are correct, proceed to step 2.
  - (2) If any check is not correct, replace power cord (paragraph 3-16-5).

Step 2. Check continuity of blowers/heater switch.

- (a) If continuity is incorrect, replace blowers/heater switch (paragraph 3-16.1).
- (b) If continuity is correct, refer to electrical diagram and troubleshoot.

2. BLOWERS OPERATE BUT NO HEAT IS PRODUCED.

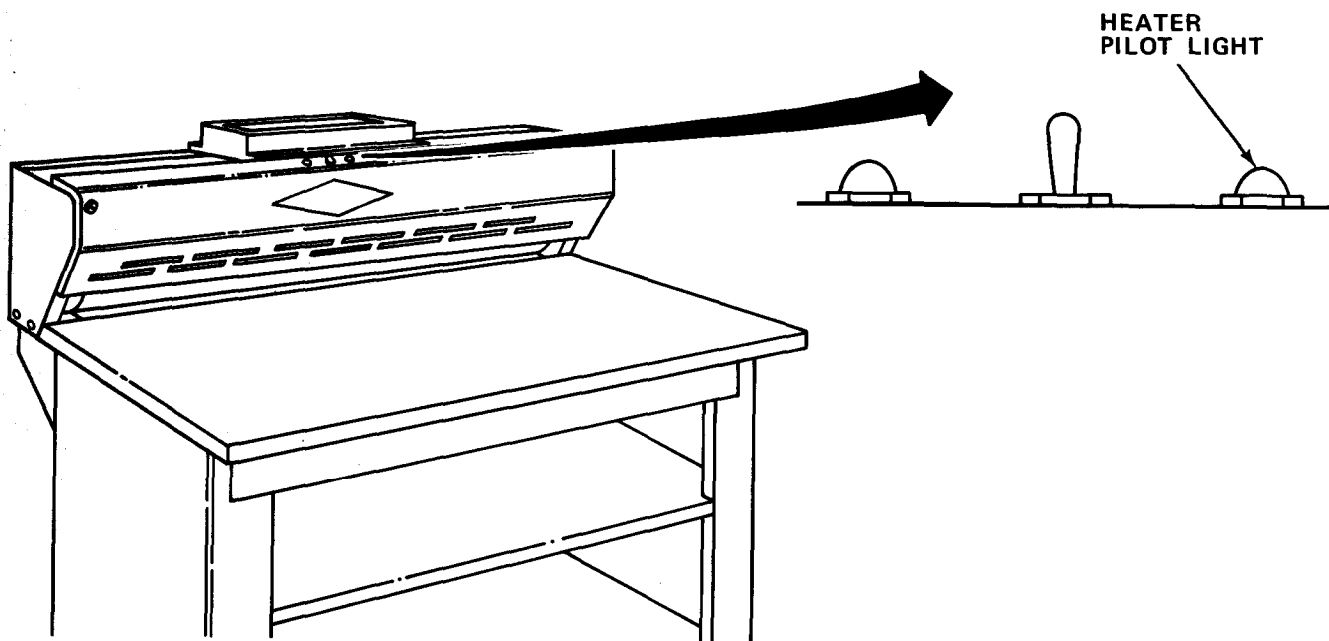




Table 3-4. ORGANIZATIONAL TROUBLESHOOTING - Cont

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
2. BLOWERS OPERATE BUT NO HEAT IS PRODUCED - Cont	<p>Step 1. Check that pilot light for heater is on.</p> <p>(a) If light is off, proceed to step 2.</p> <p>(b) If light is on, replace tubular heater (paragraph 3-16.13).</p>	
	<p>Step 2. With blowers/heater switch positioned to the right, check continuity between contacts 4 and 2.</p> <p>(a) If continuity is incorrect, replace blowers/heater switch (paragraph 3-16.1).</p> <p>(b) If continuity is correct, refer to electrical diagram and troubleshoot.</p>	
3. ONE OR BOTH BLOWERS ARE INOPERATIVE.	Visually check blowers.	<p>(a) If both blowers are inoperative, replace blowers/heater switch (paragraph 3-16.1).</p> <p>(b) If only one blower is inoperative, replace blower (paragraph 3-16.4).</p>

3-16. MAINTENANCE PROCEDURES.

This section contains instructions covering organizational maintenance functions for the plate finishing table. Personnel required are listed only if the task requires more than one.

b. After completing each maintenance procedure, perform operational check to be sure that equipment is properly functioning.

INDEX

PROCEDURES	PARAGRAPH
Replace Blowers/Heater Switch . . . . .	3-16.1
Replace Pilot Light(s) . . . . .	3-16.2
Replace Tubular Heater . . . . .	3-16.3
Replace Pancake Blower(s) . . . . .	3-16.4
Replace Power Cord . . . . .	3-16.5

3-16.1 Replace Blowers/Heater Switch.

MOS: 83FJ6, Reproduction Equipment Repairer

TOOLS:

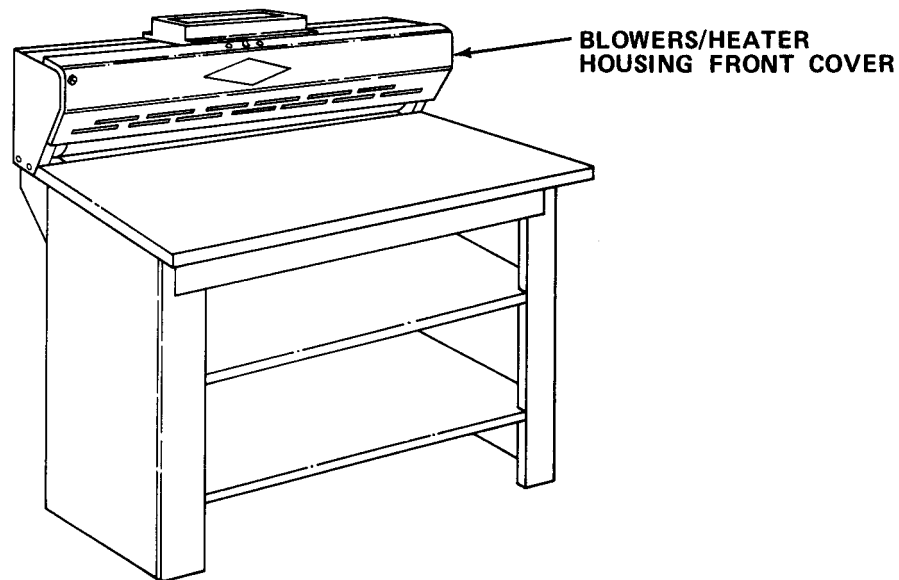
- Tool Kit, Light Machine Repair
- Flat Tip Screwdriver
- Pliers

SUPPLIES: Switch

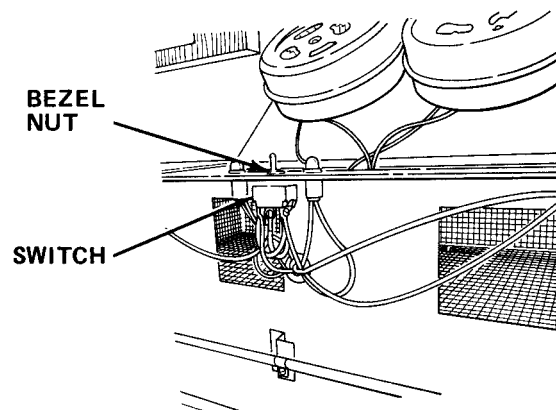
WARNING

Death or serious injury may occur from electrical shock unless power cord is unplugged before servicing.

- a. Unplug power cord.



- b. Remove fourteen screws and blowers/heater housing front cover panel.



- c. Remove bezel nut on top of blowers/heater switch and remove switch from blowers/heater housing frame.
- d. Tag and disconnect nine wires from switch and remove defective switch.
- e. Reconnect nine wires to new switch.
- f. Install new blowers/heater switch into blowers/heater housing frame and attach with bezel nut.
- g. Reinstall blowers/heater housing front cover panel.
- h. Plug in power cord.

3-16.2 Replace Pilot Light(s).

MOS: 83FJ6, Reproduction Equipment Repairer

TOOLS:

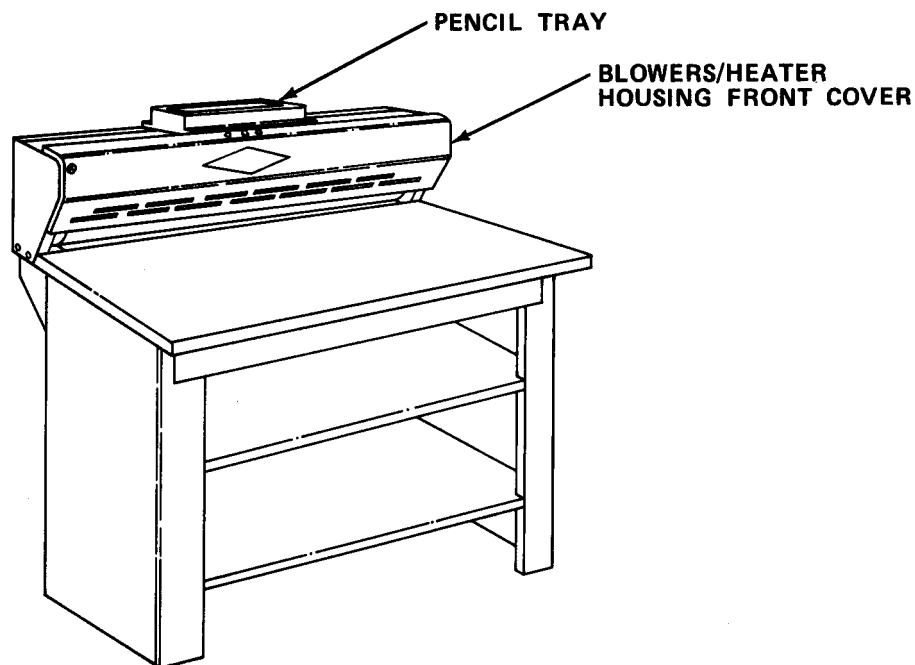
Tool Kit, Light Machine Repair  
Flat Tip Screwdriver  
Pliers

SUPPLIES: Pilot Light(s)  
Electrical Tape (Item 50, Appendix E)

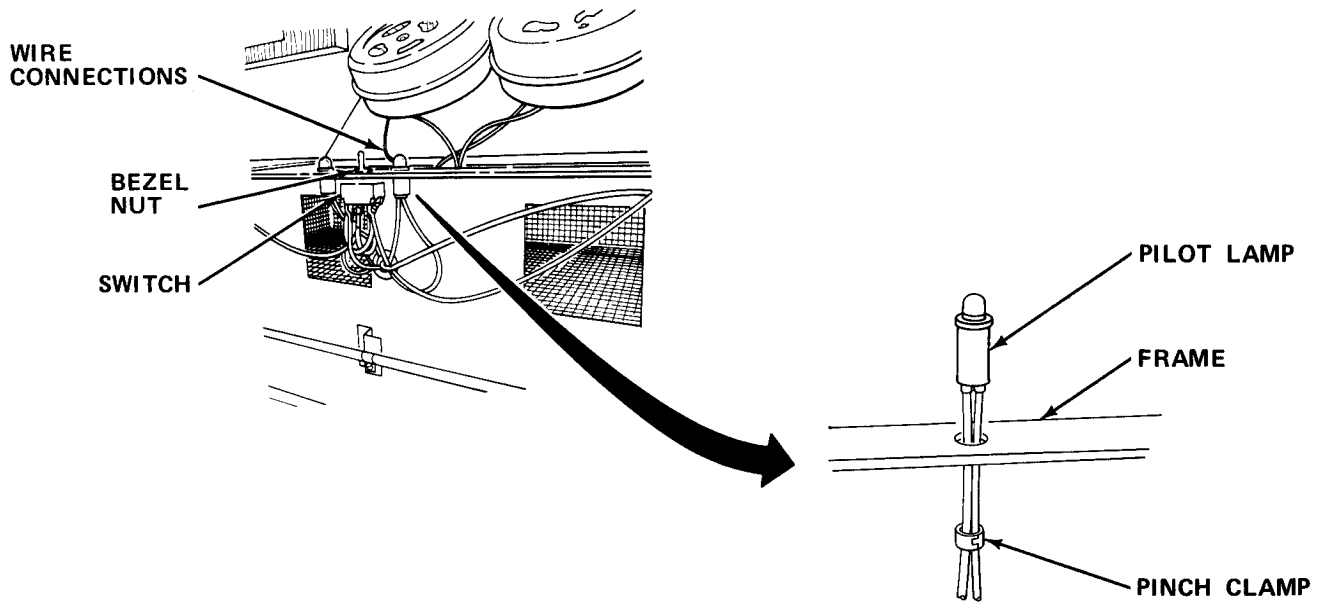
**WARNING**

Death or serious injury may occur from electrical shock unless power cord is unplugged before servicing.

- a. Unplug power cord.



- b. Remove fourteen screws and blowers/heater housing front cover panel.
- c. Remove six screws and pencil tray.



- d. Carefully lift blower mounting plate aside to gain access to wire connections under blowers.
- e. Remove bezel nut on top of blowers/heater switch and remove switch from blowers/heater housing frame.
- f. Tag and disconnect wire(s) from switch leading to defective light(s).
- g. Remove tape from bolt connector under blowers and tag and disconnect wire(s) leading to defective light(s).
- h. Remove pinch clamp on defective light(s) and remove light through top of frame.
- i. Install new light(s) through top of frame and hold in place with pinch clamp.
- j. Reconnect wire(s) using bolt connector under blowers, and retape bolt connector.
- k. Reconnect wire(s) to blowers/heater switch.
- l. Reinstall blowers/heater switch into frame and attach with bezel nut.
- m. Carefully reinstall blowers and blower mounting plate so that blowers' exhausts fit through portal holes of frame, and screw holes on top align.
- n. Reinstall pencil tray.
- o. Reinstall blowers/heater housing front cover panel.
- p. Plug in power cord.

3-16.3 Replace Tubular Heater.

MOS: 83FJ6, Reproduction Equipment Repairer

TOOLS:

Tool Kit, Light Machine Repair

Flat Tip Screwdriver

Pliers

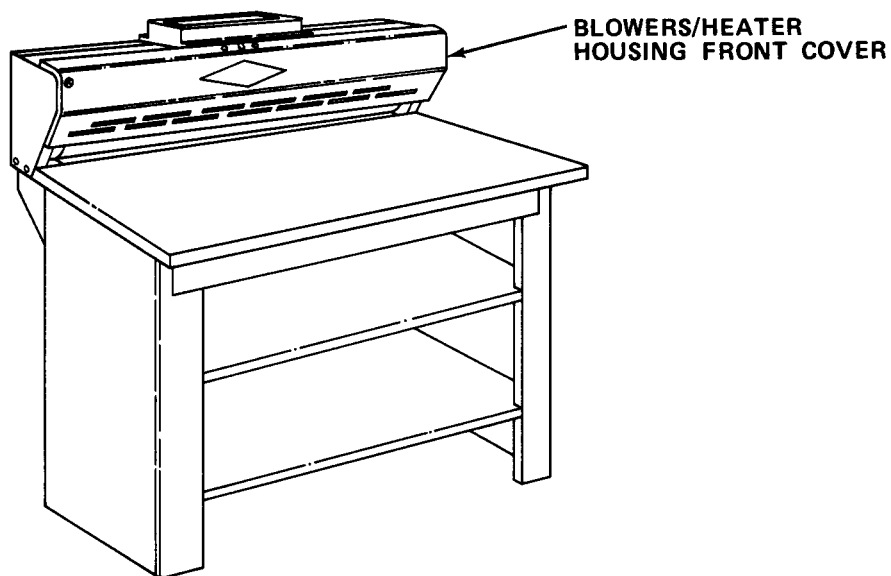
5/16 in. Combination Wrench

SUPPLIES: Tubular Heater

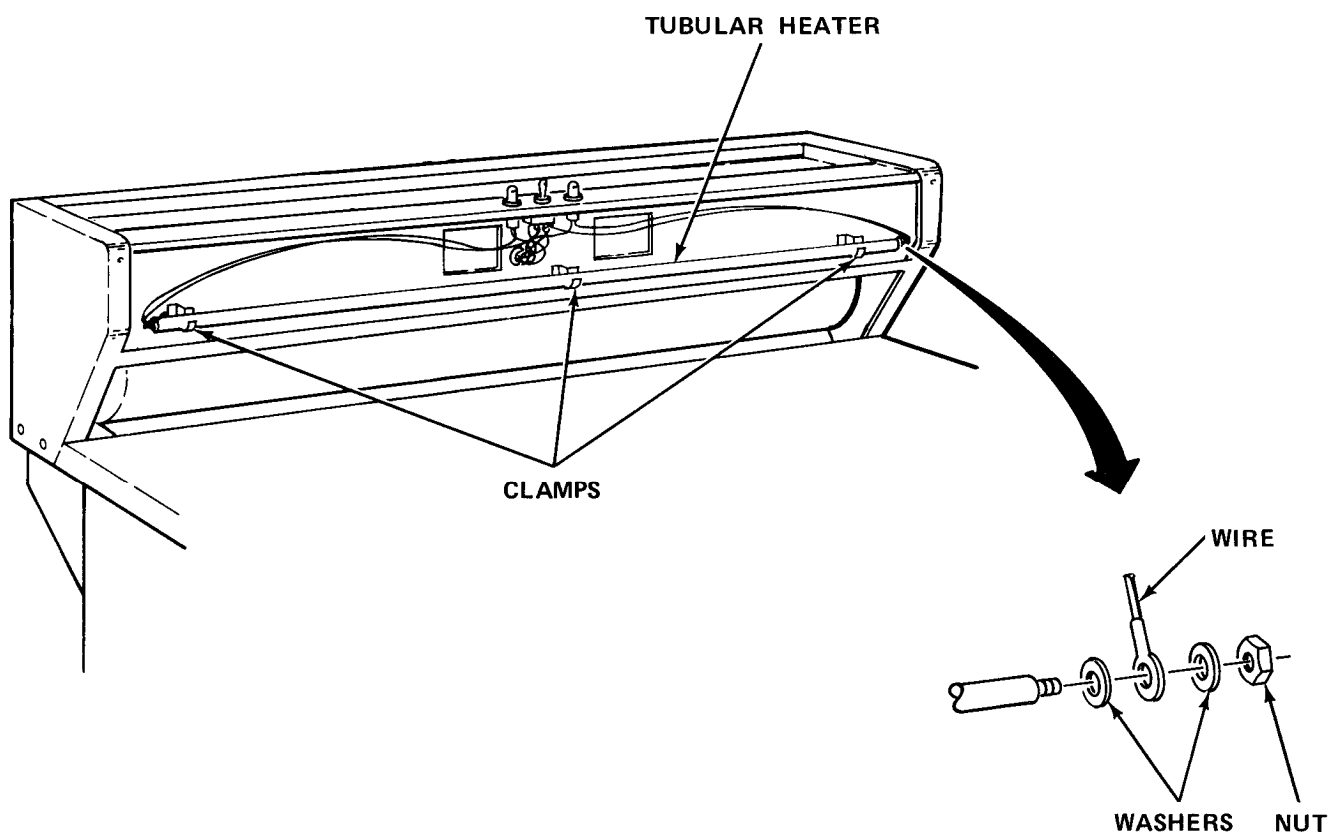
WARNING

Death or serious injury may occur from electrical shock unless power cord is unplugged before servicing.

- a. Unplug power cord.



- b. Remove fourteen screws and blower/heater housing front cover panel.



- c. Tag and disconnect wires from both ends of tubular heater.
- d. Loosen three clamps holding tubular heater in place and remove defective tubular heater.
- e. Install and center new tubular heater into housing, and tighten clamps.

### **CAUTION**

Do not overtighten nuts holding wires in place or tubular heater may be damaged.

- f. Reinstall wires to ends of tubular heater. Be sure that a washer is on either side of wire connector.
- g. Reinstall blowers/heater housing front cover panel.
- h. Plug in power cord.

3-16.4 Replace Pancake Blower(s).

MOS: 83FJ6, Reproduction Equipment Repairer

TOOLS:

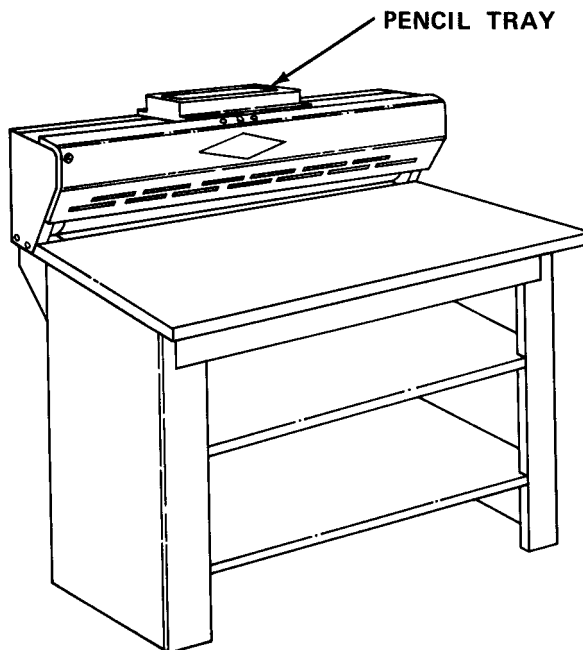
Tool Kit, Light Machine Repair  
Flat Tip Screwdriver  
7/16 in. Combination Wrench  
Pliers

SUPPLIES: Pancake Blower(s)  
Electrical Tape (Item 50, Appendix E)

WARNING

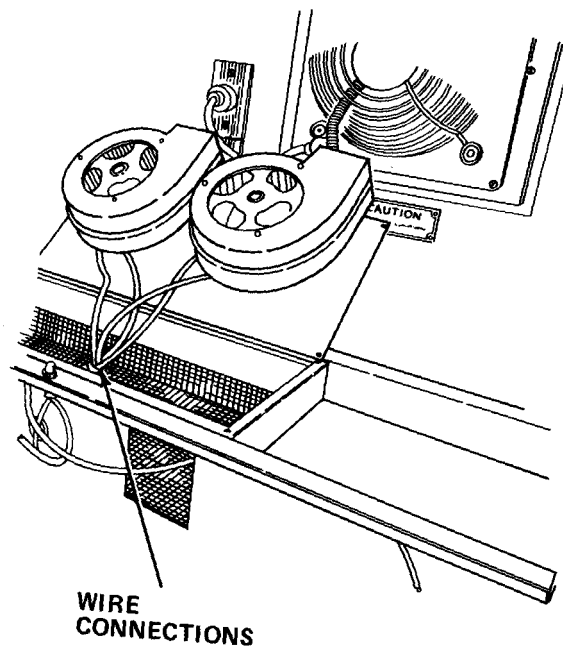
Death or serious injury may occur from electrical shock unless power cord is unplugged before servicing.

- a. Unplug power cord.

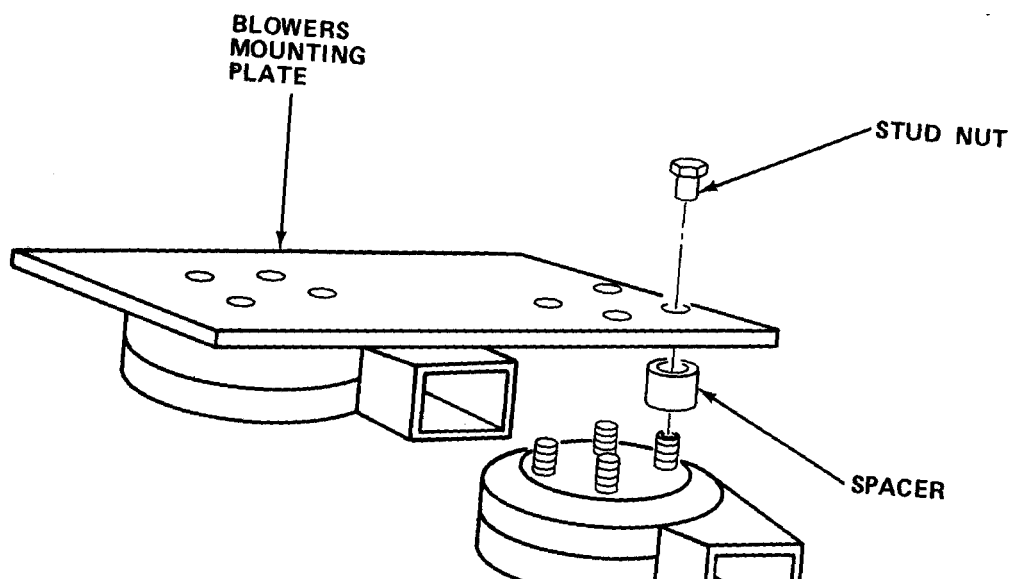


- b. Remove six screws and pencil tray.
- c. Carefully lift blowers mounting plate aside to gain access to wire connections under blowers.





- d. Remove tape from bolt connectors under blowers and tag and disconnect wires from defective blower(s).
- e. Remove four mounting nuts attaching blower(s) to mounting plate.



- f. Carefully remove defective blower(s) from mounting plate; then remove four spacers.
- g. Ensure that four spacers are installed over stud posts; then carefully install new blower(s) onto mounting plate.

- h. Reconnect wires using bolt connectors under blowers, and retape bolt connectors.

**NOTE**

It may be necessary to remove blower/heater housing front cover plate to properly align blowers' exhausts.

- i. Carefully reinstall blowers and blowers mounting plate so that blowers' exhausts fit through portal holes of frame, and screw holes on top align.
- j. Reinstall pencil tray and blowers/heater housing front cover panel if removed.
- k. Plug in power cord.

3-16.5 Replace Power Cord.

MOS: 83FJ6, Reproduction Equipment Repairer

TOOLS :

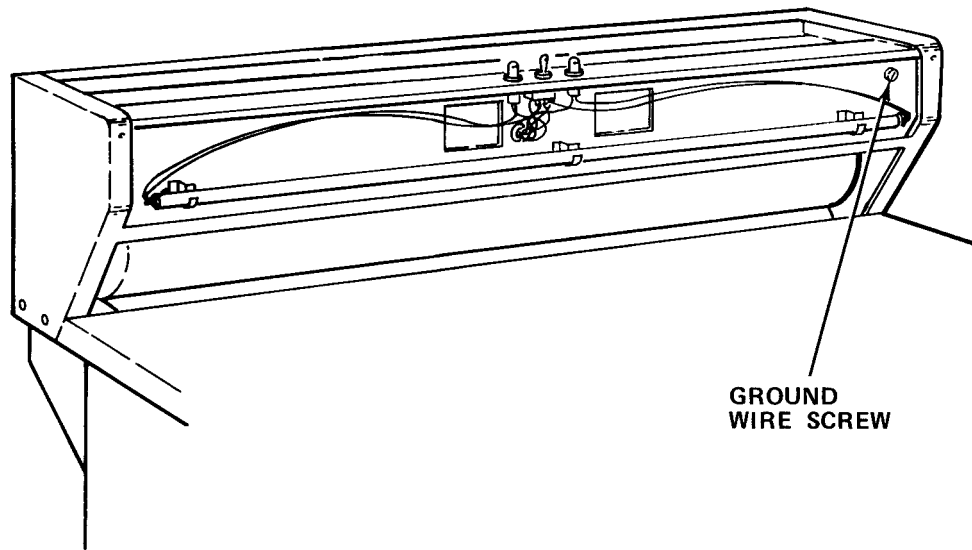
Tool Kit, Light Machine Repair  
Flat Tip Screwdriver  
7/16 in. Combination Wrench

SUPPLIES: Power Cord  
Electrical Tape (Item 50, Appendix E)

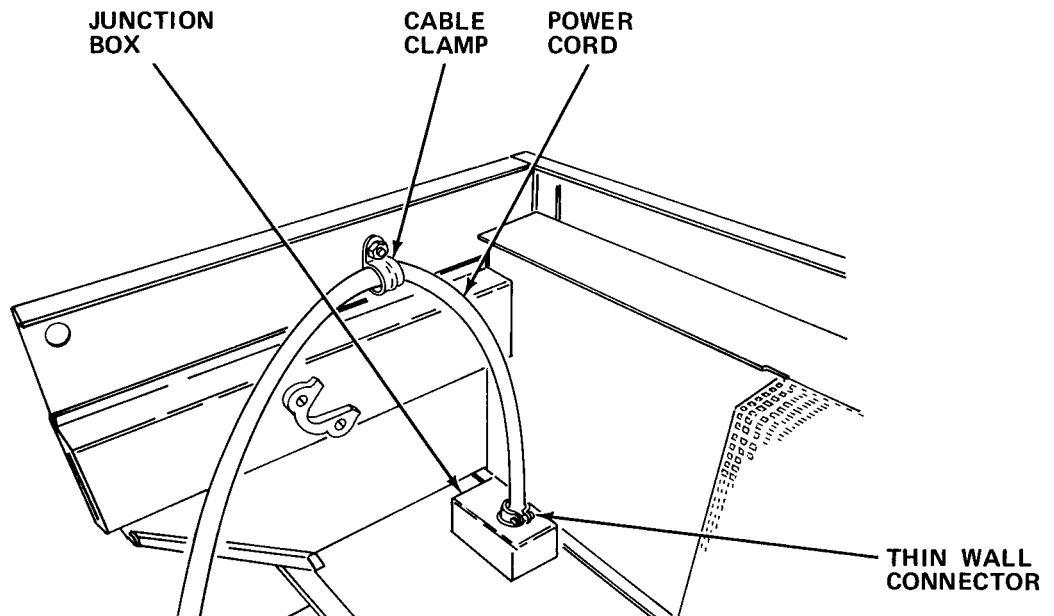
**WARNING**

Death or serious injury may occur from electrical shock unless power cord is unplugged before servicing;

- a. Unplug power cord.



- b. Remove fourteen screws and blowers/heater housing front cover panel.



- c. Remove cable clamp for power cord.
- d. Loosen top screw and remove bottom screw of power cable junction box; then remove box.
- e. Remove thin wall cable clamp from junction box.
- f. Tag and disconnect chassis ground wire.

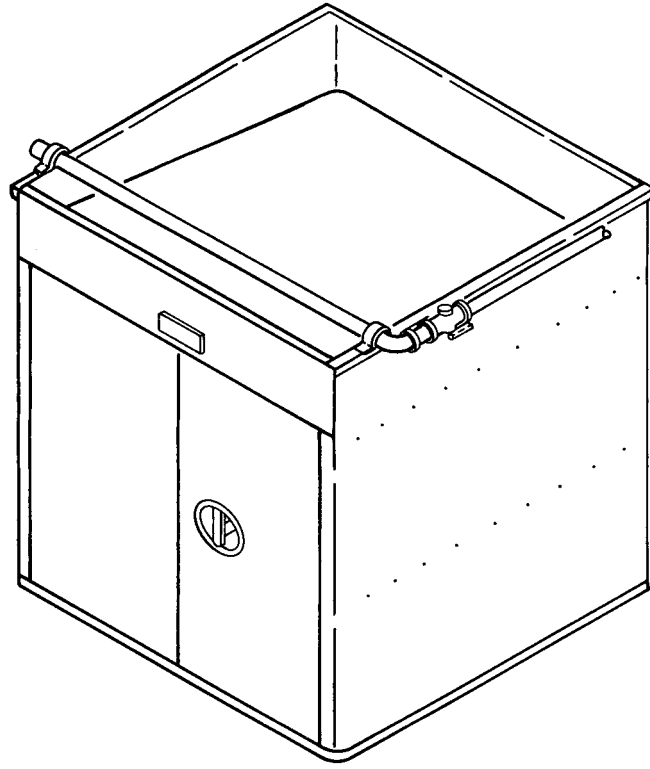
- g. Remove tape from bolt connectors; then tag and disconnect defective power cord wires.
- h. Pull defective power cord from junction box.
- i. Install new power cord into junction box and, using thin wall cable clamp, attach power cord to junction box.
- j. Connect wires to bolt connectors and retape connectors.
- k. Connect chassis ground wire.
- l. Reinstall junction box.
- m. Reinstall power cord cable clamp.
- n. Reinstall blowers/heater housing front cover panel.
- o. Plug in power cord.

3-17. PREPARATION FOR STORAGE OR SHIPMENT. Contact your battalion for packing and shipping instructions.

#### Section V. DIRECT/GENERAL SUPPORT MAINTENANCE

There are no direct/general support maintenance procedures assigned for this equipment.





## CHAPTER 4

## SINK

## Section I. INTRODUCTION

## 4.1.1 GENERAL INFORMATION

## 4.1.1.1 SCOPE

Model Number and Equipment Name

Sink

Purpose of Equipment

To provide a work station for development and washing lithographic plates.

## 4.1.2 EQUIPMENT DESCRIPTION AND DATA

## 4.1.2.1 EQUIPMENT PURPOSE, CAPABILITIES, AND FEATURES

Purpose

To provide a sink for the development and rinsing of lithographic offset plates, and use of chemical solutions.

Capabilities and Features

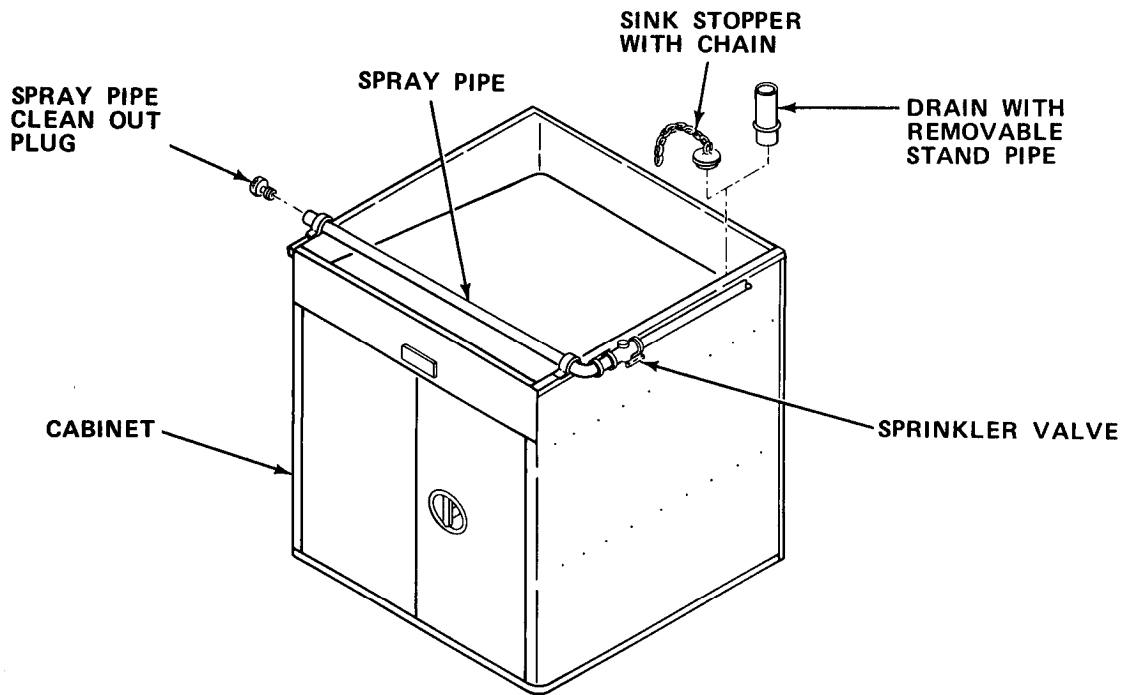
Built-in water spray for even rinsing.

Standpipe drain system.

Convenient storage under sink.

Section II. OPERATING INSTRUCTIONS

4.2.1 DESCRIPTION AND USE OF OPERATOR'S CONTROLS AND INDICATORS



CONTROL OR INDICATOR	FUNCTION
Drain with Removable Standpipe	Connected to section drain line, standpipe allows flowing water at preset depth.
Sprinkler Valve	Controls water supply to spray pipe.
Spray Pipe	Sprays water into sink.
Spray Pipe Clean Out Plug	Allows cleaning of spray pipe.
Cabinet	Storage for supplies and/or chemicals.



4.2.2 OPERATOR'S PREVENTIVE MAINTENANCE CHECKS AND SERVICES

- a. Always keep in mind the WARNINGS and CAUTIONS when performing PMCS. Table 4-1 lists the PMCS procedures to be performed by the operator. Be sure to perform the PMCS at the frequency indicated by the INTERVAL codes in the table.
- b. If your equipment fails to operate, troubleshoot with the proper equipment. Report any deficiencies in accordance with DA PAM 738-750.

NOTE

If the equipment must be kept in continuous operation, check and service only those items that can safely be checked and serviced without disturbing operation. Make the complete checks and services when the equipment can be shut down.

- c. The numbers found in the ITEM NUMBER column shall be used as a source of item numbers for the TM NUMBER column on DA Form 2404, Equipment Inspection and Maintenance Worksheet, in recording the results of PMCS.
- d. List of tools and materials required for PMCS is as follows:

<u>Item</u>	<u>Quantity</u>
Flat-Tipped Screwdriver	1
Rags	ar
Bucket	1

Table 4-1. OPERATOR'S PREVENTIVE MAINTENANCE CHECKS AND SERVICES

B - Before                      W - Weekly                      AN - Annually                      (Number) - Hundreds of Hours  
 D - During                      M - Monthly                      S - Semiannually  
 A - After                      Q - Quarterly                      BI - Biennially

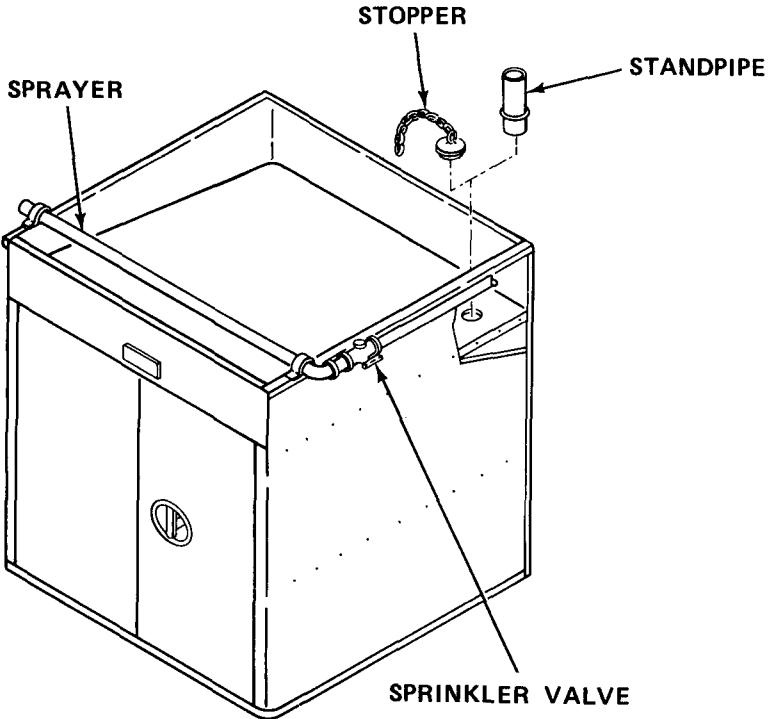
ITEM NO.	INTERVAL	ITEM TO BE INSPECTED  PROCEDURE	For Readiness Reporting, Equipment Is Not Ready/ Available If:
1	W	<p><b><u>SINK</u></b></p> <p><b>INSPECT.</b></p>  <p>1. Inspect pipe fittings and valve for leakage.</p> <p>2. Inspect standpipe and stopper for cracked or broken condition.</p>	<p>Fittings leak or valve does not stop water flow.</p> <p>Standpipe or stopper is missing or broken.</p>

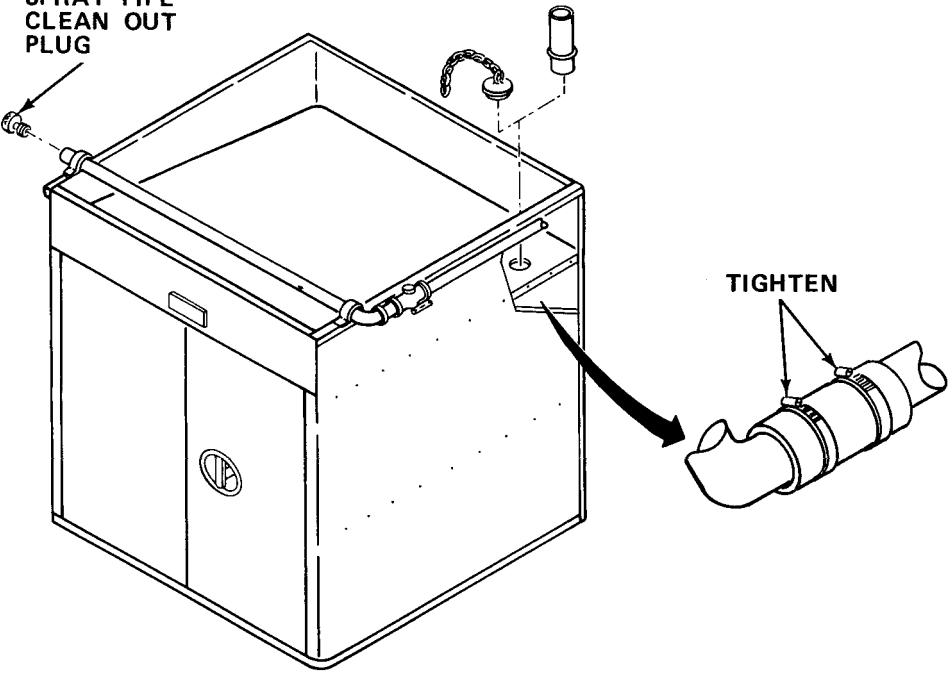
Table 4-1. OPERATOR'S PREVENTIVE MAINTENANCE CHECKS AND SERVICES

B - Before  
D - During  
A - After

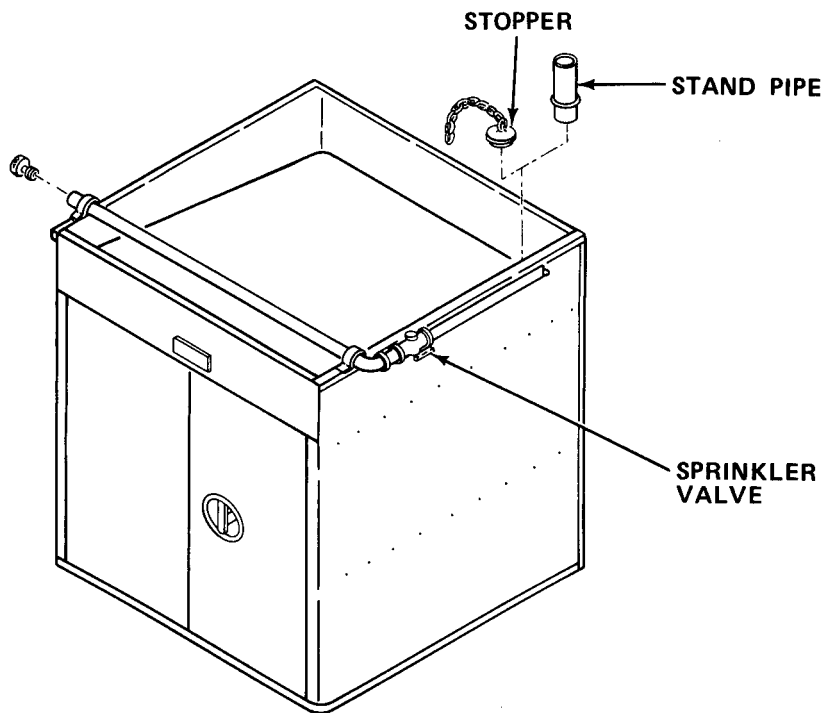
W - Weekly  
M - Monthly  
Q - Quarterly

AN - Annually  
S - Semiannually  
BI - Biennially

(Number) - Hundreds of Hours

ITEM NO.	INTERVAL	ITEM TO BE INSPECTED  PROCEDURE	For Readiness Reporting, Equipment Is Not Ready/ Available If:
1	W	<p><b>SINK</b></p> <p><b>INSPECT (Cont).</b></p>  <p>3. Inspect drain fittings for leakage or loose hose clamp fittings. Tighten hose clamps.</p> <p>4. Inspect spray pipe for proper water flow. Clean spray pipe.</p>	<p>Leaks or missing fittings.</p> <p>Improper water flow.</p>

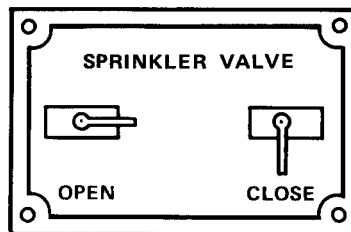
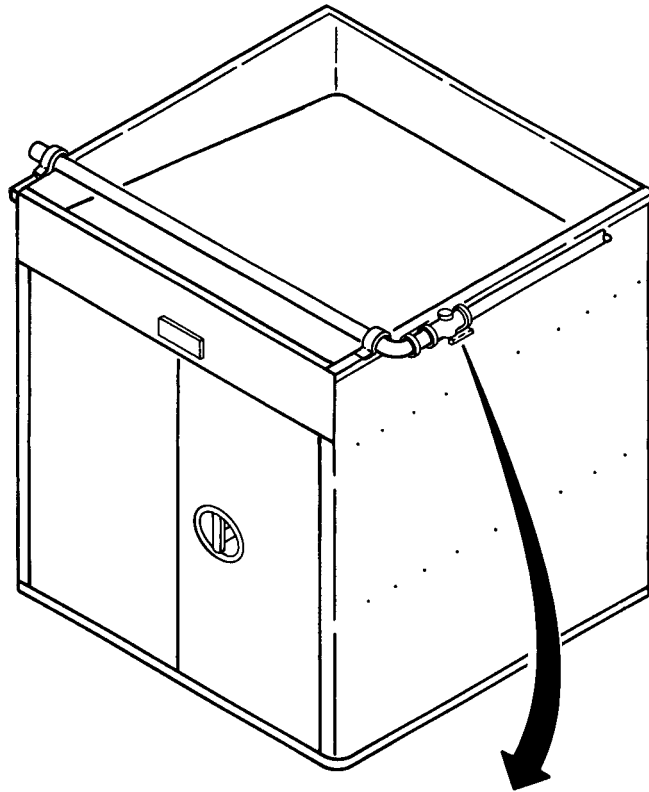
### 4.2.3 OPERATION UNDER USUAL CONDITIONS



#### 4.2.3.1 OPERATING PROCEDURES

- a. Be sure water tank has sufficient water to complete the task.
- b. Use stopper in drain if chemicals are to be contained in sink.
- c.** If there is the requirement to spray water and maintain a liquid level, screw the standpipe into the drain. The level of liquid will be as high as the standpipe.

4. 2. 3. 2 OPERATING INSTRUCTIONS ON DECALS AND INSTRUCTION PLATES



Section III. OPERATOR'S MAINTENANCE INSTRUCTIONS

4.3.1 LUBRICATION INSTRUCTIONS. This equipment does not require periodic lubrication.

4.3.2 OPERATOR'S TROUBLESHOOTING PROCEDURES

a. The table lists the common malfunctions which you may find during operation or maintenance of the Sink.

b. THIS MANUAL CANNOT LIST ALL THE POSSIBLE MALFUNCTIONS OR EVERY POSSIBLE TEST/INSPECTION AND CORRECTIVE ACTION. IF A MALFUNCTION IS NOT LISTED OR CORRECTED BY A LISTED CORRECTIVE ACTION, NOTIFY YOUR SUPERVISOR.

Table 4-2. OPERATOR'S TROUBLESHOOTING

---

MALFUNCTION
TEST OR INSPECTION/PROBABLE CAUSE
CORRECTIVE ACTION
1. <u>WATER DOES NOT SPRAY.</u>
Check level of water in water tank.
Fill up tank.
2. <u>WATER DOES NOT DRAIN.</u>
Check drain for clog.
Clear clog (para 4.3.3.1).

---

4.3.3 **MAINTENANCE PROCEDURES.** This section contains the step-by-step procedures for performing Operator's Maintenance for the Sink. Personnel required are listed only if the task requires more than one. **If** personnel are not listed, it means one person can do the task.

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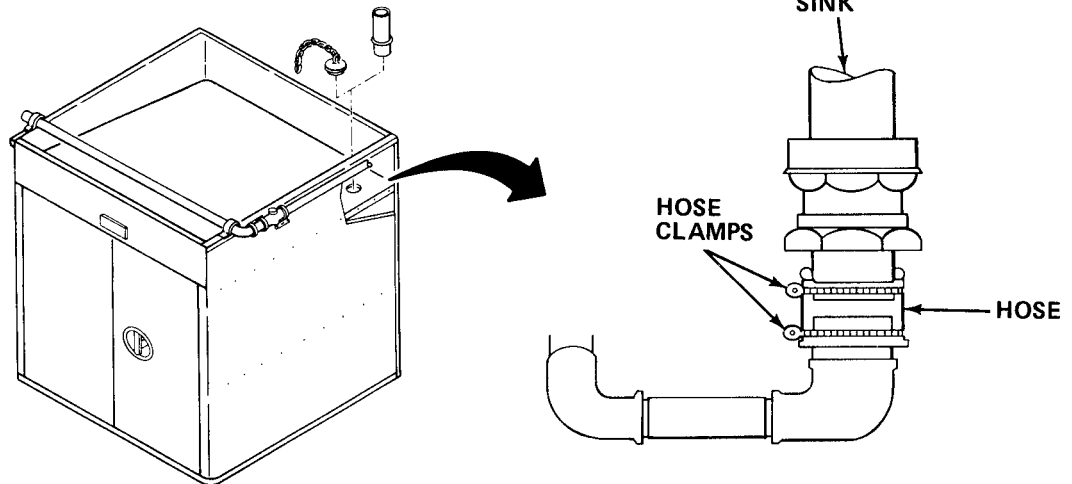
PROCEDURE	PARAGRAPH
Clear Drain. . . . .	...4.3.3.1

4.3.3.1 CLEAR DRAIN.

TOOLS: Flat-Tipped Screwdriver

SUPPLIES: Bucket  
Rags

1. Position bucket under drain hose.



2. Loosen hose clamps and pull hose from sink drain and drain pipe.
3. Inspect drain and remove any foreign objects.
4. Reposition hose on drain and drain pipe.
5. Tighten hose clamps; be certain that clamps are over sink drain and drain pipe.
6. Clean any spilled water or liquid.
7. Perform operational test.

Section IV. ORGANIZATIONAL MAINTENANCE INSTRUCTIONS

4.4.1 REPAIR PARTS; SPECIAL TOOLS; TEST, MEASUREMENT, AND DIAGNOSTIC EQUIPMENT; AND SUPPORT EQUIPMENT

4.4.1.1 COMMON TOOLS AND EQUIPMENT. For authorized common tools and equipment, refer to the Modified Table of Organization and Equipment (MTOE) applicable to your unit.

4.4.1.2 SPECIAL TOOLS; TEST, MEASUREMENT, AND DIAGNOSTIC EQUIPMENT; AND SUPPORT EQUIPMENT. No special tools; test, measurement, and diagnostic equipment; or support equipment are required for the repair of this equipment at the Organizational level of maintenance.

4.4.1.3 REPAIR PARTS. Repair parts for this equipment are listed in TM 5-3610-259-24P, Repair Parts and Special Tools List (RPSTL), covering Organizational, Direct Support, and General Support Maintenance for this equipment.

4.4.2 MAINTENANCE PROCEDURES. This section contains the step-by-step procedures for performing Organizational Maintenance for the Sink. Personnel required are listed only if the task requires more than one. If personnel are not listed, it means one person can do the task.

INDEX

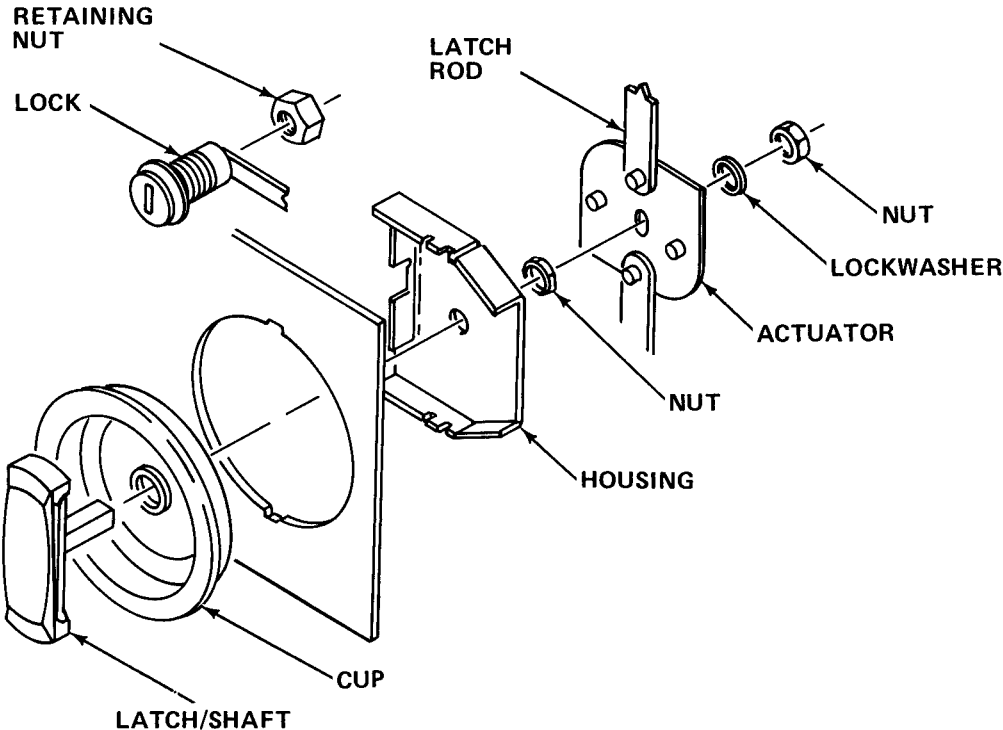
PROCEDURE	PARAGRAPH
Replace Latch. . . . .	4.4.2.1



4. 4. 2. 1 REPLACE LATCH.

TOOLS : Tool Kit

SUPPLIES: Flush Cut-Type Latch  
Locking Rod



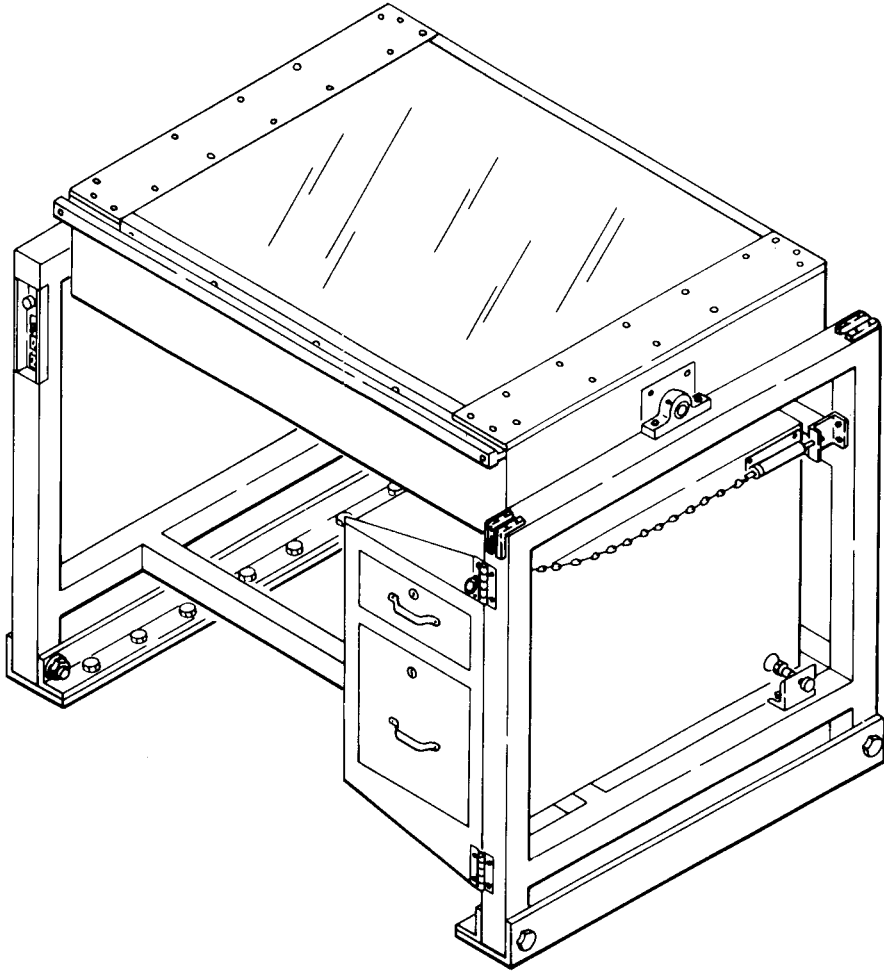
1. Remove nut and lockwasher from shaft.
2. Remove latch rod actuator and two latch rods.
3. Remove nut and housing.
4. Remove latch/shaft and cup.
5. Remove lock retaining nut and lock.
6. Install new lock and attach to door with lock retaining nut.
- 7\* Install new cup and latch/shaft.
8. Install new housing. Be sure alignment tabs on housing are inserted in notches cut in door. Attach housing, finger tight, with nut.
9. Reinsert latch rods into guides located at top and bottom of door. Reinstall actuator on shaft with pins facing front door. Reinstall latch rod ends on upper and lower actuator pins, and secure actuator against housing with lockwasher and nut.

4.4.3 PREPARATION FOR STORAGE OR SHIPMENT. In the event individual items of equipment must be removed from the Section for repair or replacement, contact your battalion for packing and shipping instructions.

Section V. DIRECT/GENERAL SUPPORT MAINTENANCE INSTRUCTIONS

4.5.1 There are no assigned Direct/General Support Maintenance tasks.





## CHAPTER 5

## DRAFTING, SCRIBING/TRACING TABLE

## Section I INTRODUCTION

## 5-1. GENERAL INFORMATION.

## 5-1.1 Scope.

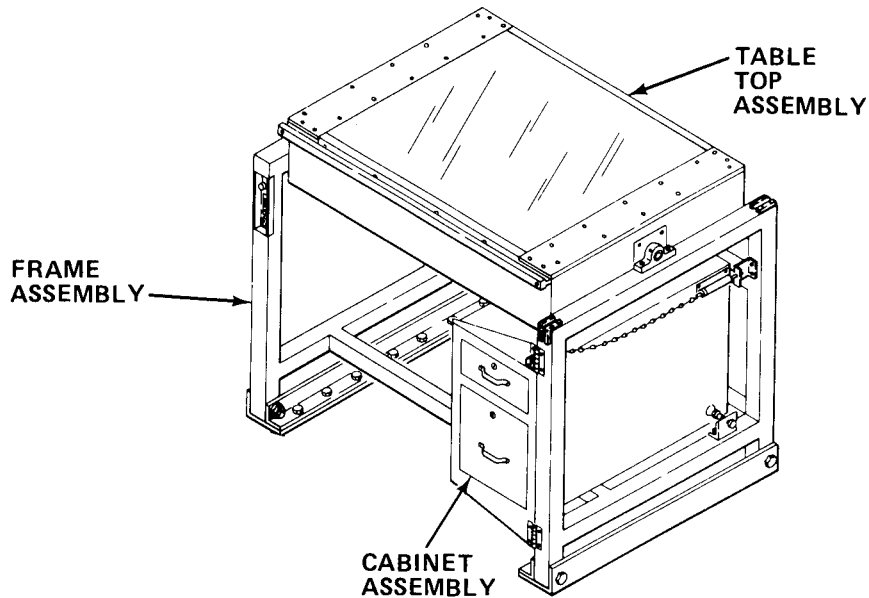
- a. Model Number and Equipment Name. Model 99-9933 Drafting, Scribing/Tracing Table
- b. Purpose of Equipment. To provide user with drafting, scribing, or tracing table in compact unit.

## 5-2. EQUIPMENT DESCRIPTION.

5-2.1 Equipment Characteristics, Capabilities, and Features.

- a. Rapid work surface selection.
- b. Auxiliary electrical outlets.
- c. Two drawer storage.
- d. Tilting work surface (0, 5, and 10 degrees).
- e. Easy access to all controls.
- f. Diffused light source.
- g. Drawing guard on front edge of drafting, scribing/tracing table.
- h. Sturdy steel base.

5-2.2 Location and Description of Major Components.



**FRAME ASSEMBLY.** Supports table top assembly, drawer assembly, control panel, safety stops, and tilt lock.

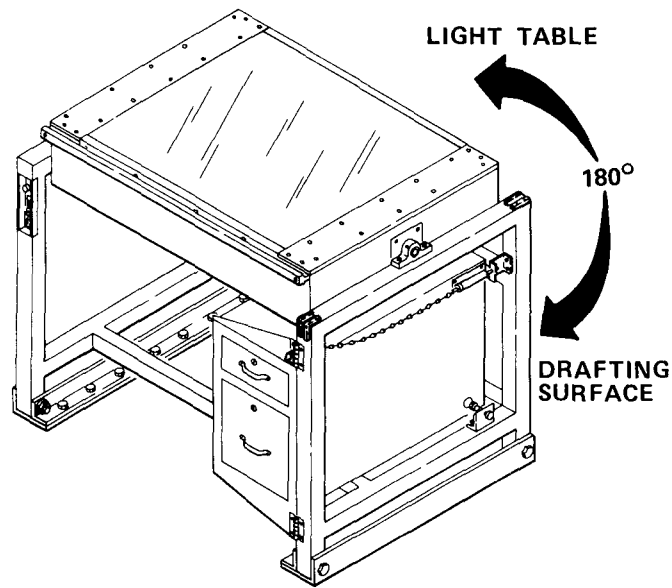
**TABLE TOP ASSEMBLY.** Consists of drafting board, light board, diffused lighting, and drawing guard.

**CABINET ASSEMBLY.** Consists of two drawers and drawer lock module,

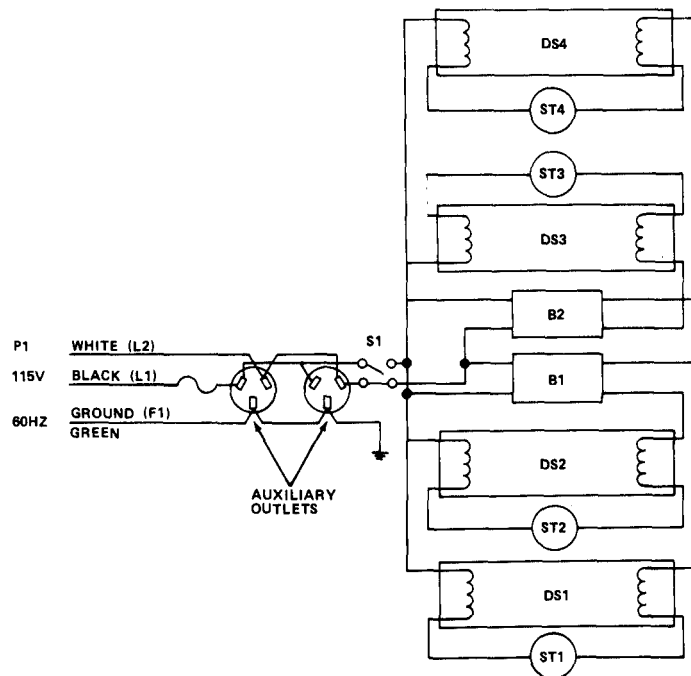
5-2.3 Equipment Data.

Power Requirements	115 V, 60 Hz, Single-Phase
Drafting Surface	42 in. X 31 in. (106.7 cm X 78.7 cm)
Light Table Surface	30 in. X 30 in. (76.2 cm X 76.2 cm)
Dimensions	
Width	47 in. (119.4 cm)
Depth	34 in. (86.4 cm)
Height (Table Flat)	42 in. (106.7 cm)

5-3. TECHNICAL PRINCIPLES OF OPERATION.



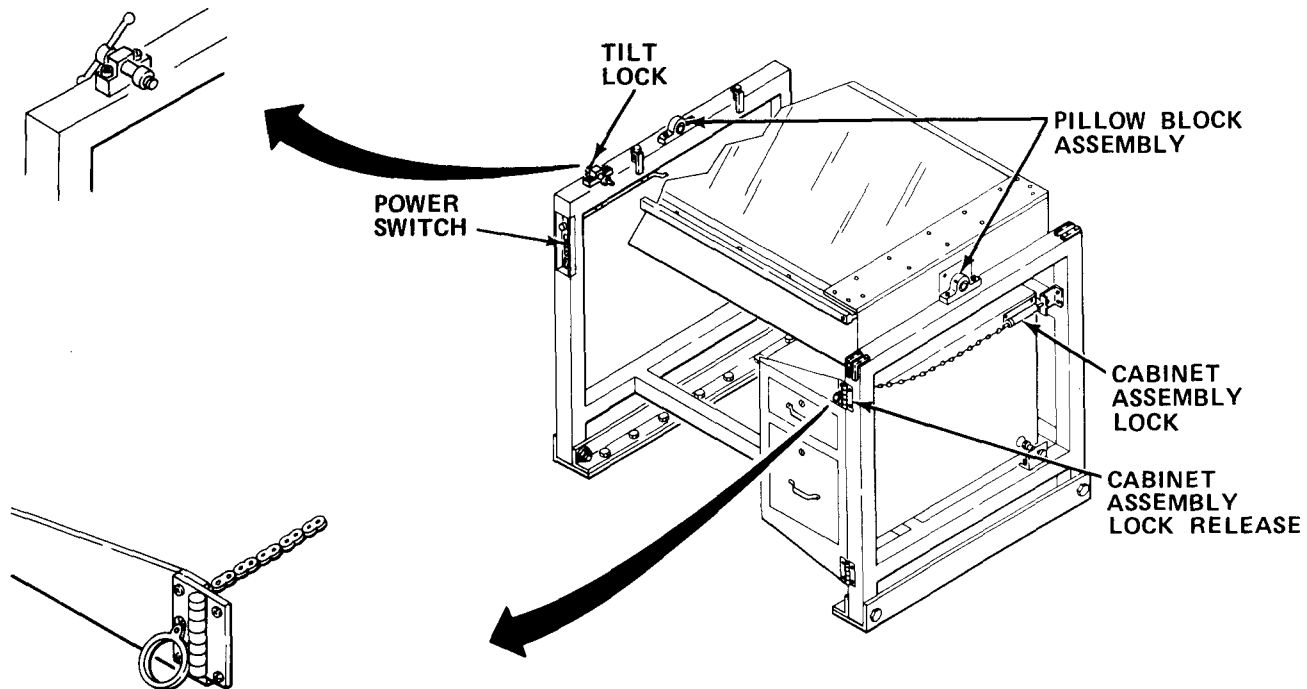
5-3.1 General. The movable top permits selection of drafting surface or light table. Has safety stops so that table top will turn only 180 degrees to prevent damage to electrical wiring. For drafting surface, rotate top away from operator. For light table, rotate top toward operator.



5-3.2 Electrical System. Provides power to the light table and two auxiliary outlets. The auxiliary outlets are located on the control panel. When plug p1 is connected, 115 V ac is applied to auxiliary outlets even if power switch S1 is off.

Section II OPERATING INSTRUCTIONS

5-4. DESCRIPTION AND USE OF OPERATOR'S CONTROLS AND INDICATORS.



Control or Indicator	Function
Tilt Lock	Used to change angle of work surface or to change work surface. Loosen tilt lock to change work surface. Tighten to secure in position.
Pillow Block Assembly	Houses the bearing which allows easy rotation of the work surface.
Cabinet Assembly Lock and Cabinet Assembly Lock Release	Located at upper cabinet assembly hinge on right front table leg. To open cabinet assembly, pull cabinet assembly lock release and swing assembly out, so it is not under table.
Power Switch	Provides power to light table lamps only.



5-5. OPERATOR PREVENTIVE MAINTENANCE CHECKS AND SERVICES.

- a. Before You Operate. Always keep in mind the WARNINGS and CAUTIONS. Perform your before (B) PMCS.
- b. While You Operate. Always keep in mind the WARNINGS and CAUTIONS. Perform your during (D) PMCS.
- c. After You Operate. Be sure to perform your after (A) PMCS.
- d. If Your Equipment Fails to Operate. Troubleshoot with proper equipment. Report any deficiencies using the proper forms. See DA Pam 738-750.

5-5.1 PMCS Procedures.

- a. PMCS are designed to keep the equipment in good working condition by performing periodic service tasks.
- b. Service intervals provide you, the operator, with time schedules that determine when to perform specified service tasks.
- c. The "Equipment is Not Ready/Available If" column is used for identification of conditions that make the equipment not ready/available for readiness reporting purposes or denies use of the equipment until corrective maintenance is performed.
- d. If your equipment fails to operate after PMCS is performed, immediately report this condition to your supervisor.
- e. Perform weekly as well as before operation if you are the assigned operator and have not operated the item since the last weekly or if you are operating the item for the first time.
- f. Item number column. Item numbers are assigned in chronological ascending sequence regardless of interval designation. These numbers are used for your "TM Number" column on DA Form 2404, Equipment Inspection and Maintenance Worksheet in recording results of PMCS.
- g. Interval columns. This column determines the time period designated to perform your PMCS.
- h. Item to be inspected and procedures column. This column lists functional groups and their respective assemblies and subassemblies as shown in the Maintenance Allocation chart (Appendix B). The appropriate check or service procedure follows the specific to be inspected.
- i. Equipment is not ready/available if: column. This column indicates the reason or cause why your equipment is not ready/available to perform its primary mission.
- j. List of tools and materials required for PMCS is as follows:

<u>Item</u>	<u>Quantity</u>
Liquid Detergent (Item 9, Appendix E)	ar
Cheesecloth (Item 6, Appendix E)	ar

Table 5-1. OPERATOR PREVENTIVE MAINTENANCE

NOTE

If the equipment must be kept in continuous operation, check and service only those items that can be checked and serviced without disturbing operation. Make the complete checks and services when the equipment can be shut down.

B - Before  
D - During  
A - After

W - Weekly  
M - Monthly  
Q - Quarterly

AN - Annually  
S - Semiannually  
BI - Biennially

(Number) - Hundreds of Hours

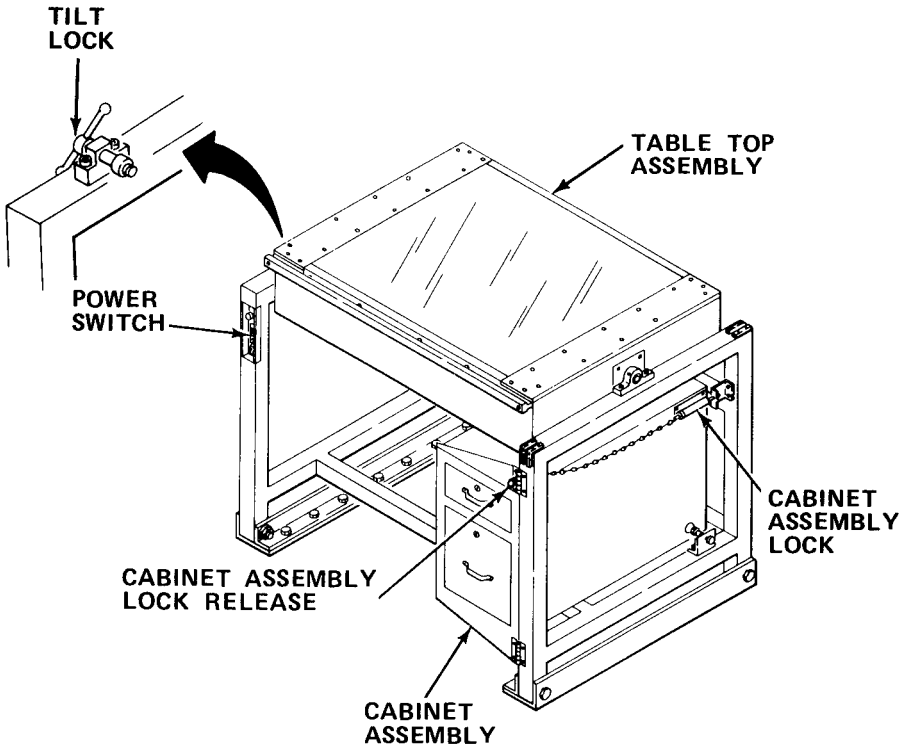
ITEM NO.	INTERVAL	ITEM TO BE INSPECTED  PROCEDURE	For Readiness Reporting, Equipment Is Not Ready/ Available If:
1	B/A	<p><b><u>DRAFTING, SCRIBING/TRACING TABLE</u></b></p> <p><u>Inspect.</u></p> <p>1. Glass table surface.</p>  <p>2. Turn power switch off.</p>	Glass cracked or broken.

Table 5-1. OPERATOR PREVENTIVE MAINTENANCE CHECKS AND SERVICES - Cont

B - Before                      W - Weekly                      AN - Annual ly                      (Number) - Hundreds of Hours  
 D - During                      M - Monthly                      S - Semi annual ly  
 A - After                      Q - Quarterly                      BI - Bienni al ly

ITEM NO.	IN-TER-VAL	ITEM TO BE INSPECTED  PROCEDURE	For Readiness Reporting, Equipment Is Not Ready/ Available If:
1	B/A	<p><u>DRAFTING, SCRIBING/TRACING TABLE - Cont</u></p> <p><u>Inspect - Cont</u></p> <ol style="list-style-type: none"> <li>3. Pull cabinet assembly lock release ring and swing out cabinet assembly.</li> <li>4. Loosen tilt lock until it clears table top assembly.</li> <li>5. Rotate table top 180°.</li> <li>6. Tighten tilt lock to secure table top assembly in position.</li> <li>7. Inspect wooden table top.</li> <li>8. Rotate table top 180° and tighten tilt lock.</li> <li>9. Return cabinet assembly to its normal position under table.</li> <li>10. Press firmly on cabinet assembly front until cabinet assembly lock clicks.</li> <li>11. Turn power switch on. Be sure all table lights are on. Check surface for cracks or breaks.</li> <li>12. Turn off power switch.</li> </ol>	<p>Tilt lock is damaged.</p> <p>Table top does not rotate.</p> <p>Table top will not lock in position.</p> <p>Table top has gouges, dents, or cuts.</p> <p>Table lights do not illuminate. Glass is broken. Power switch is broken.</p>

Table 5-1. OPERATOR PREVENTIVE MAINTENANCE CHECKS AND SERVICES - Cont

B - Before                      W - Weekly                      AN - Annual ly                      (Number) - Hundreds of Hours  
 D - During                      M - Monthly                      S - Semi annual ly  
 A - After                      Q - Quarter ly                      BI - Bienni al ly

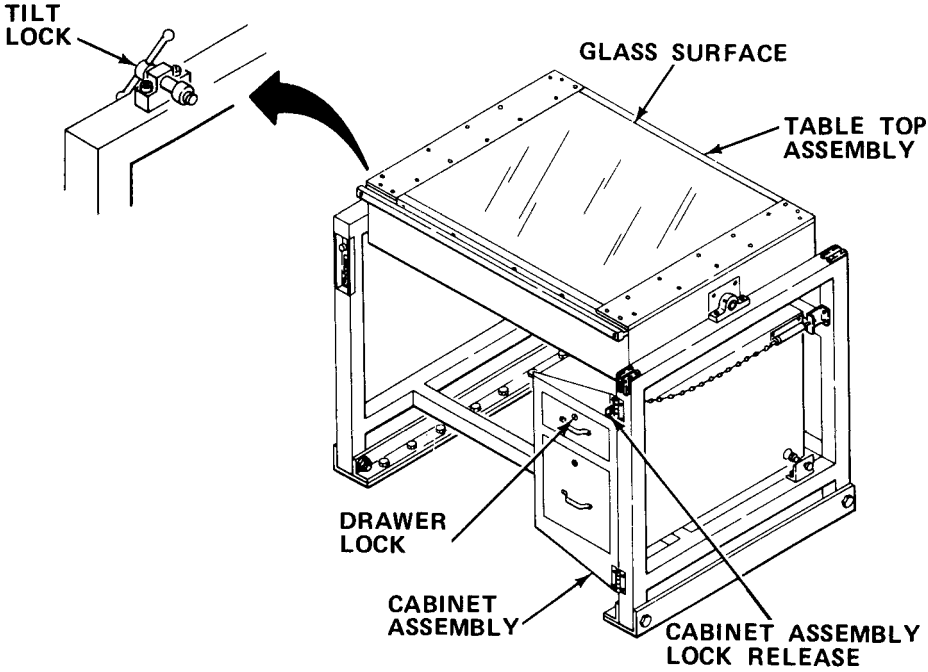
ITEM NO.	INTERVAL	ITEM TO BE INSPECTED	PROCEDURE	For Readiness Reporting, Equipment Is Not Ready/ Available If:
2	B	<p><u>DRAFTING, SCRIBING/TRACING TABLE - Cont</u></p> <p><u>Service.</u></p>	 <p>The diagram illustrates the components of a drafting table. A 'TILT LOCK' is shown on the left, with an arrow pointing to its location on the table's frame. The main view shows the 'GLASS SURFACE' on top of the 'TABLE TOP ASSEMBLY'. Below the table top is the 'CABINET ASSEMBLY', which includes a 'DRAWER LOCK' and a 'CABINET ASSEMBLY LOCK RELEASE' mechanism.</p>	<p>Table top does not rotate.</p>
		<p><u>WARNING</u></p>		
		<p>Death or serious injury may occur from electrical shock unless power cord is unplugged before servicing.</p>		
		<ol style="list-style-type: none"> <li>1. Unplug power cord.</li> <li>2. Pull cabinet assembly lock release ring and swing out cabinet assembly.</li> <li>3. Loosen tilt lock until it clears table top assembly.</li> <li>4. Rotate table top assembly until glass surface is on top.</li> </ol>		

Table 5-1. OPERATOR PREVENTIVE MAINTENANCE CHECKS AND SERVICES - Cont

B - Before                      W - Weekly                      AN - Annually                      (Number) - Hundreds of Hours  
 D - During                      M - Monthly                      S - Semiannually  
 A - After                      Q - Quarterly                      BI - Biennially

ITEM NO.	INTERVAL	ITEM TO BE INSPECTED  PROCEDURE	For Readiness Reporting, Equipment Is Not Ready/ Available If:
2	B	<p><u>DRAFTING, SCRIBING/TRACING TABLE - Cont</u></p> <p><u>Service - Cont</u></p> <p>5. Tighten tilt lock to secure table top assembly in position.</p> <p style="text-align: center;"><u>CAUTION</u></p> <p>Do not use abrasive cleaner on glass surface. Do not use running water or excessive water on cloth. Use moist cloth. Abrasive cleaner will scratch glass surface. Excessive water can cause equipment damage.</p> <p>6. Wipe glass surface with cheesecloth moistened in mild solution of detergent and water.</p> <p>7. Wipe glass surface with dry cheesecloth to remove streaks and smears.</p> <p>8. Swing cabinet assembly to its "norms" position under table.</p> <p>9. Plug in power cord.</p>	

5-6. OPERATION UNDER USUAL CONDITIONS.

5-6.1 Assembly and Preparation for Use.

- a. Clean work surface.
- b. Plug power cord into electrical receptacle.
- c. Turn power switch on for light table use.

5-6.2 Operating Procedures.

- a. Changing work surface.

CAUTION

Safety stops have been included to prevent overtravel of table top and damage to electrical wiring. If drafting surface is in top position, swing front edge of table top down to change work surface. If light table is in top position, swing front edge up to change work surface. Table cannot be rotated until cabinet assembly is swung out.

- (1) Pull cabinet assembly lock release ring and swing out cabinet assembly.
- (2) Loosen tilt lock until it clears table top assembly.
- (3) Rotate table top to desired position.
- (4) Tighten tilt lock to secure table top assembly in position.
- (5) Return cabinet assembly to its normal position under table top assembly.
- (6) Press firmly on cabinet assembly front until cabinet assembly lock clicks.

5-6.3 Preparation for Movement.

- a. Turn off power.
- b. Unplug power cord. Coil power cord and tape to table.
- c. Rotate table top assembly, if necessary, to be sure glass surface faces upward.
- d. Tighten tilt lock to secure table top assembly.
- e. Press firmly on cabinet assembly front until cabinet assembly lock clicks.
- f. Check cabinet drawers for open containers and loose items. Seal containers and secure all loose items.
- g. Lock cabinet drawers.

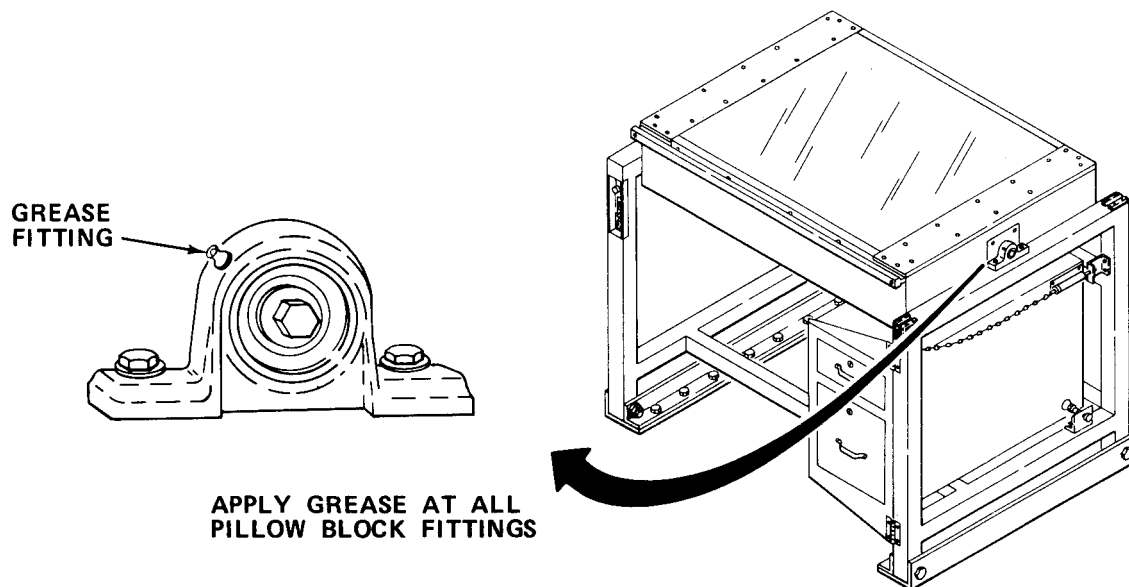
5-7. OPERATION UNDER UNUSUAL CONDITIONS. This equipment is designed for operation only in a controlled environment.

### Section III OPERATOR MAINTENANCE

#### 5-8. LUBRICATION INSTRUCTIONS.

##### NOTE

These lubrication instructions are mandatory.



5-8.1 Pillow Block Fittings. Apply ball and roller bearing grease (Item 16, Appendix E) to both pillow blocks annually.

- a. Apply grease sparingly using grease gun.
- b. Wipe grease fittings clean after application.

5-9. TROUBLESHOOTING PROCEDURES.

a. The table lists the common malfunctions which you may find during operation or maintenance of the drafting, scribing/tracing table, or its components. You should perform the test/inspections and corrective actions in the order listed.

b. This manual cannot list all malfunctions that may occur, nor all test or inspections and corrective actions. If a malfunction is not listed or is not corrected by listed corrective actions, notify your supervisor.

Table 5-2. TROUBLESHOOTING

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
1. LAMPS DO NOT LIGHT.	<p>Step 1. Check that power switch is on.</p> <p>(a) If power switch is on, proceed to step 2.</p> <p>(b) Turn on power switch.</p> <p>Step 2. Check that power cord is plugged in.</p> <p>(a) If power cord is plugged in, proceed to step 3.</p> <p>(b) Plug in power cord.</p> <p>Step 3. Visually check fuse for broken filament.</p> <p>(a) Replace fuse (paragraphs 5-10. 1)</p> <p>(b) If filament is not broken, refer to organizational maintenance.</p>	
2. TABLE DOES NOT LOCK.	<p>Check for loose tilt lock.</p> <p>(a) If loose, tighten.</p> <p>(b) If tight, refer to organizational maintenance.</p>	



5-10. MAINTENANCE PROCEDURES.

a. This section contains instructions covering operator maintenance functions for the drafting, scribing/tracing table. Personnel required are listed only if the task requires more than one.

b. After completing each maintenance procedure, perform operational check to be sure that equipment is properly functioning.

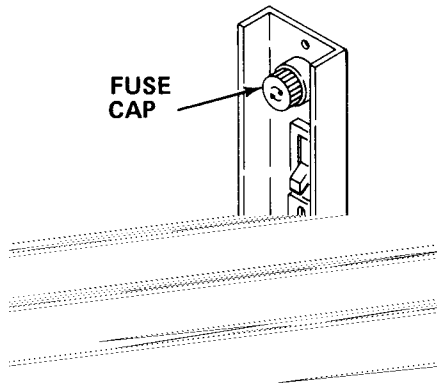
INDEX

PROCEDURE	PARAGRAPH
Replace Fuse . . . . .	5-10.1

5-10.1 Replace Fuse.

MOS: 83E, Photo and Layout Specialist

SUPPLIES: Fuse



a. Turn off power switch.

**WARNING**

Death or serious injury may occur from electrical shock unless power cord is unplugged before servicing.

- b. Unplug power cord.
- c. Push in on cap and turn left.
- d. Remove defective fuse.
- e. Install new fuse, push in, and turn right.
- f. Plug in power cord.

Section IV ORGANIZATIONAL MAINTENANCE

5-11. LUBRICATION INSTRUCTIONS.

5-11.1 Pillow Block Fittings. After replacement, apply ball and roller bearing grease to pillow blocks (Item 16, Appendix E).

- a. Apply grease sparingly using grease gun.
- b. Wipe grease fittings clean after application.

5-12. REPAIR PARTS; SPECIAL TOOLS; TEST, MEASUREMENT, AND DIAGNOSTIC EQUIPMENT (TMDE); AND SUPPORT EQUIPMENT.

5-12.1 Common Tools and Equipment. For authorized common tools and equipment, refer to the Modified Table of Organization and Equipment (MTOE) applicable to your unit.

5-12.2 Special Tools; Test, Measurement, and Diagnostic Equipment; and Support Equipment. Special Tools, TMDE, and Support Equipment is listed in the applicable repair parts and special tools list and in Appendix B of this manual.

5-12.3 Repair Parts. Repair parts are listed and illustrated in the Repair Parts and Special Tools List, TM 5-3610-260-24P covering organizational maintenance for this equipment.

5-13. SERVICE UPON RECEIPT. The drafting, scribing/tracing table may be received mounted in the section or in a shipping crate.

5-13.1 Checking Unpacked Equipment.

a. Inspect the equipment for damage incurred during shipment. If equipment has been damaged, report the damage on DD Form 6, Packing Improvement Report.

b. Check the equipment against the packing list to see if the shipment is complete. Report all discrepancies in accordance with the instructions of DA Pam 738-750.

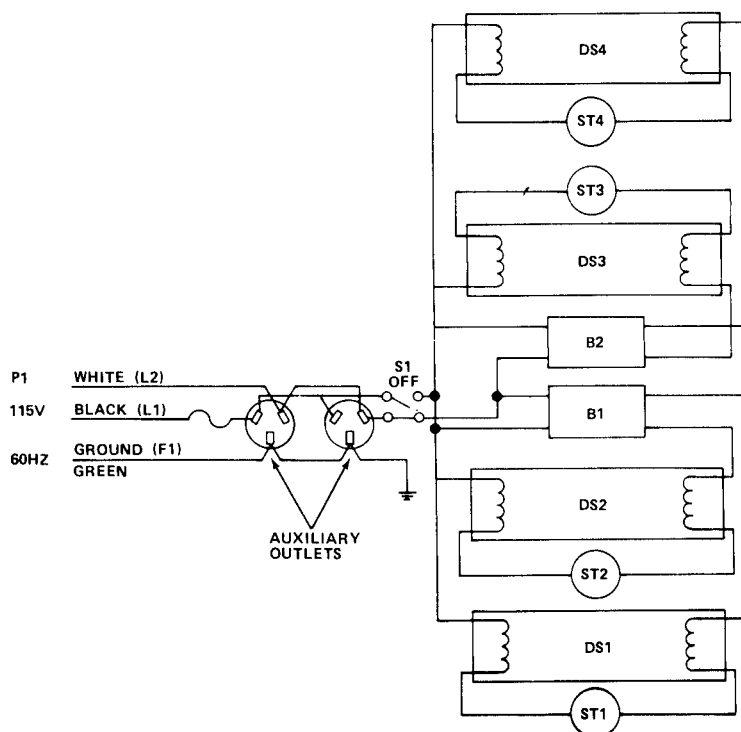
c. Check to see whether the equipment has been modified.

5-14. ORGANIZATIONAL PREVENTATIVE MAINTENANCE CHECKS AND SERVICES. There are no organizational PMCS procedures assigned for this equipment.

5-15. ORGANIZATIONAL TROUBLESHOOTING PROCEDURES.

a. Organizational troubleshooting procedures cover the most common malfunctions that may be repaired at the organizational level. Repair or adjustment requiring specialized equipment is not authorized unless such equipment is available. Troubleshooting procedures used by the operator should be conducted in addition to the organizational troubleshooting procedures.

b. This manual cannot list all the possible malfunctions or every possible test/inspection and corrective action. If a malfunction is not listed or corrected by a listed corrective action, notify your supervisor.



c. For unidentified malfunctions, use the facing schematic or foldout located at the end of this manual for further fault analysis.

d. If the drafting, scribing/tracing table does not power-up when turned on, verify that 115 V ac is present at the receptacle. **If** voltage is not present, plug equipment into receptacle with power available and proceed with equipment troubleshooting. Perform no-power procedures for dead receptacle (Table 1-4).

Table 5-3. ORGANIZATIONAL TROUBLESHOOTING

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
-------------	--------------------	-------------------

1. LAMPS DO NOT LIGHT.

Step 1. Check continuity of power switch.

(a) **If** continuity exists, proceed to step 2.

(b) If no continuity exists, replace power switch (paragraph 5-16.1).

Step 2. Check continuity of power cord.

(a) If no continuity exists, replace power cord (paragraph 5-16.2).

Table 5-3. ORGANIZATIONAL TROUBLESHOOTING - Cont

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
1. LAMPS DO NOT LIGHT - Cont	Step 2. Check continuity of power cord - Cont	(b) If continuity exists, replace lamp starter (paragraph 5-16.5).  (c) If lamps still do not light, replace ballast (paragraph 5-16.4).
2. POWER RECEPTACLES DO NOT WORK.	Step 1. Check continuity of power cord.	(a) If continuity exists, proceed to step 2.  (b) If no continuity exists, replace power cord (paragraph 5-16.2).
	Step 2. Check continuity of receptacle.	Repair receptacle (paragraph 5-16.3).
3. TABLE DOES NOT LOCK.	Step 1. Check for loose tilt lock.	(a) If tight, proceed to step 2.  (b) Tighten tilt lock.
	Step 2. Check for defective tilt lock.	(a) If good, proceed to step 3.  (b) If defective, replace (paragraph 5-16.6).
	Step 3. Check for loose tilt locking block.	(a) If tight, proceed to step 4.  (b) If loose, tighten.

Table 5-3. ORGANIZATIONAL TROUBLESHOOTING - Cont

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
3. TABLE DOES NOT LOCK - Cont		
	Step 4. Check for defective tilt locking block.	(a) If good, proceed to step 5. (b) If defective, replace (paragraph 5-16.6).
	Step 5. Check for defective tilt locking plate.	If defective, replace (paragraph 5-16.6).

5-16. MAINTENANCE PROCEDURES.

a. This section contains instructions covering organizational maintenance functions for the drafting, scribing/tracing table. Personnel required are listed only if the task requires more than one.

b. After completing each maintenance procedure, perform operational check to be sure that equipment is properly functioning.

INDEX

PROCEDURES	PARAGRAPH
Replace Power Switch . . . . .	5-16.1
Replace Power Cord . . . . .	5-16.2
Replace Receptacle . . . . .	5-16.3
Replace Lamp Ballast . . . . .	5-16.4
Replace Tube/Starter . . . . .	5-16.5
Repair Tilt Lock Assembly. . . . .	5-16.6
Replace Pillow Block Assembly. . . . .	5-16.7

5-16.1 Replace Power Switch

MOS: 83FJ6, Reproduction Equipment Repairer

TOOLS :

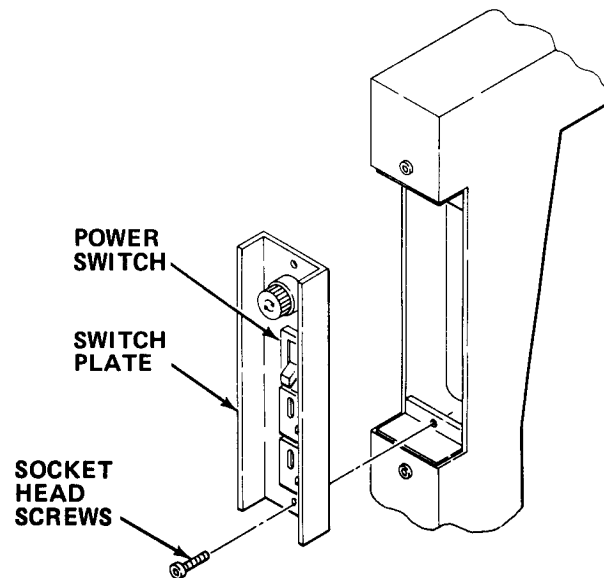
Tool Kit, Light Machine Repair  
Hex Head Key Wrench Set

SUPPLIES: Power Switch

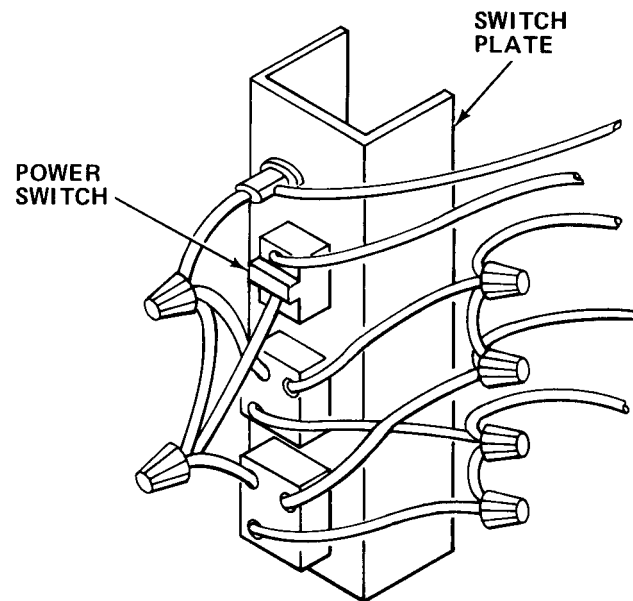
WARNING

Death or serious injury may occur from electrical shock unless power cord is unplugged before servicing.

- a. Turn off power switch.
- b. Unplug power cord.



- c. Remove socket head screws and pull switch plate out.



- d. Tag and disconnect wires from power switch.
- e. Remove defective power switch from front of switch plate.
- f. Install new power switch.
- g. Reconnect wires to power switch and remove tags.
- h. Reinstall switch plate and secure with socket head screws.
- i. Plug in power cord.

5-16.2 Replace Power Cord.

MOS: 83FJ6, Reproduction Equipment Repairer

TOOLS:

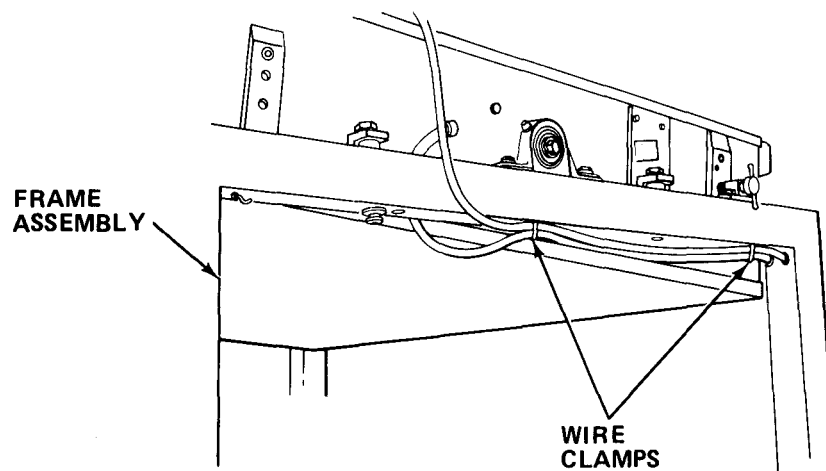
Tool Kit, Light Machine Repair  
Flat Tip Screwdriver  
Hex Head Key Wrench Set  
Soldering Iron

SUPPLIES: Power Cord  
Solder

**WARNING**

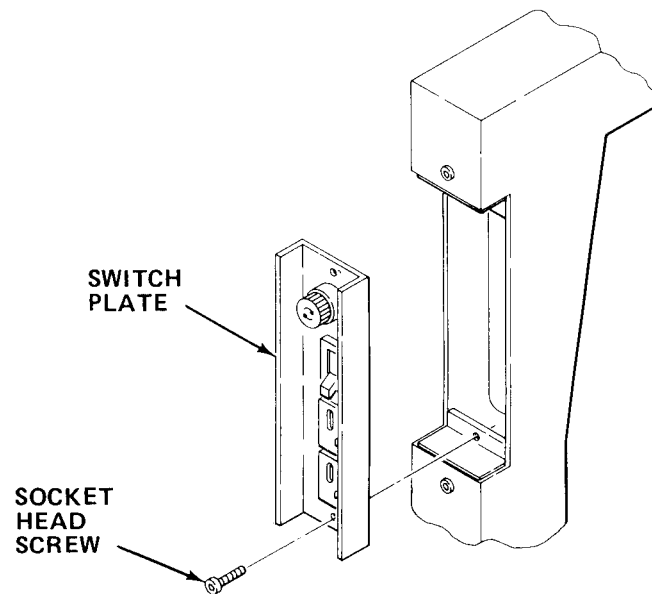
Death or serious injury may occur from electrical shock unless power cord is unplugged before servicing.

- a. Turn off power switch.
- b. Unplug power cord, and remove fuse from fuse holder.

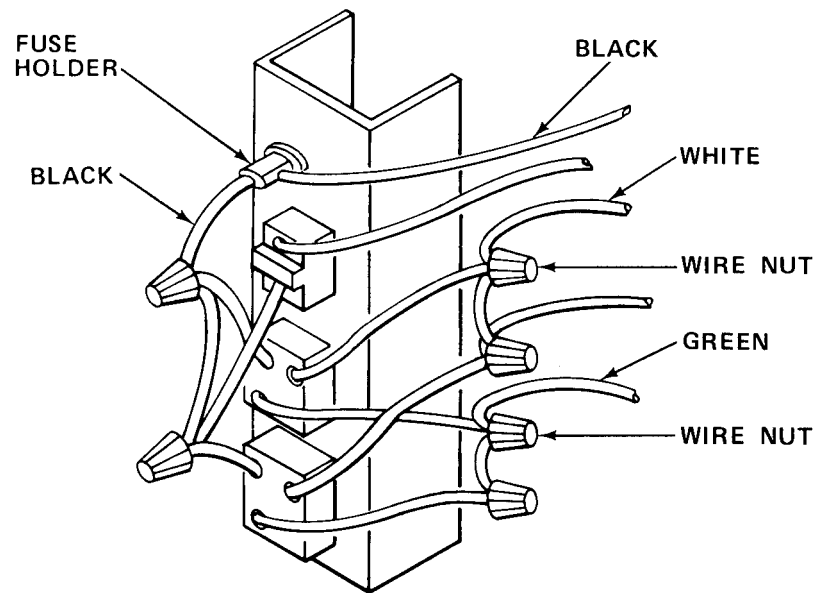


- c. Remove wire clamps located on frame assembly.





- d. Remove socket head screws and pull switch plate out.
- e. Tag wire connections for proper reconnection of wires.



- f. Desolder black power cord lead from fuse holder.
- g. Disconnect white lead and green ground at wire nuts.
- h. Remove power cord.
- i. Insert new power cord through hole in back of leg.
- j. Reconnect white lead and green ground and tighten wire nuts.

- k. Solder black lead to fuse holder.
- l. Reinstall wire clamps.
- m. Reinstall switch plate and secure with socket head screws.
- n. Reinstall fuse in fuse holder and plug in power cord.

### 5-16.3 Replace Receptacle.

MOS: 83FJ6, Reproduction Equipment Repairer

TOOLS:

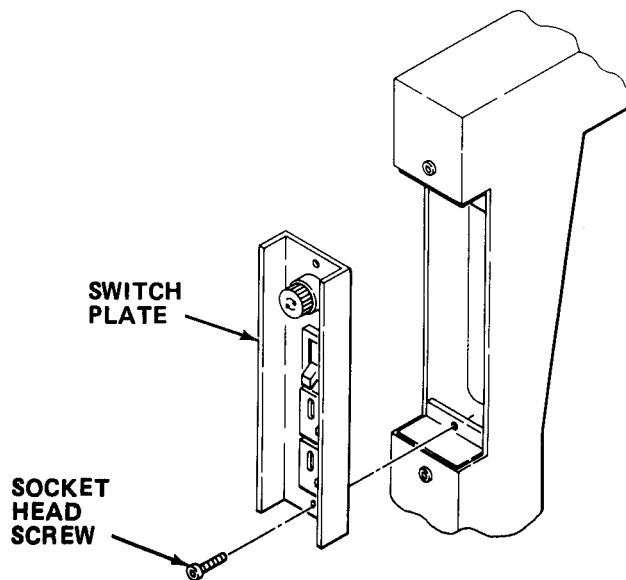
Tool Kit, Light Machine Repair  
Flat Tip Screwdriver  
Hex Head Key Wrench Set

SUPPLIES: Receptacle

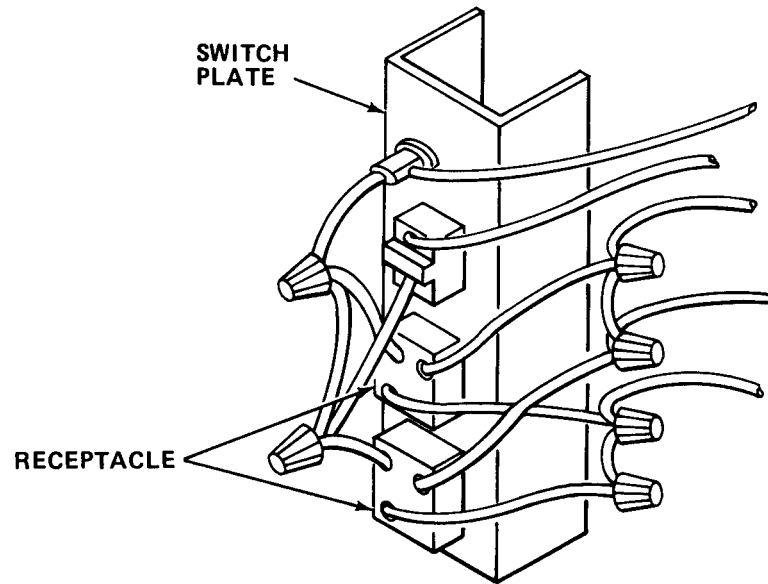
#### WARNING

Death or serious injury may occur from electrical shock unless power cord is unplugged before servicing.

- a. Turn off power switch.
- b. Unplug power cord.



- c. Remove socket head screws and pull switch plate out.



- d. Tag and disconnect wires from defective receptacle.
- e. Remove defective receptacle from switch assembly.
- f. Install new receptacle and reconnect wires.
- g. Reinstall switch plate and secure with socket head screws.
- h. Plug in power cord.

5-16.4 Replace Lamp Ballast.

MOS: 83FJ6, Reproduction Equipment Repairer

TOOLS :

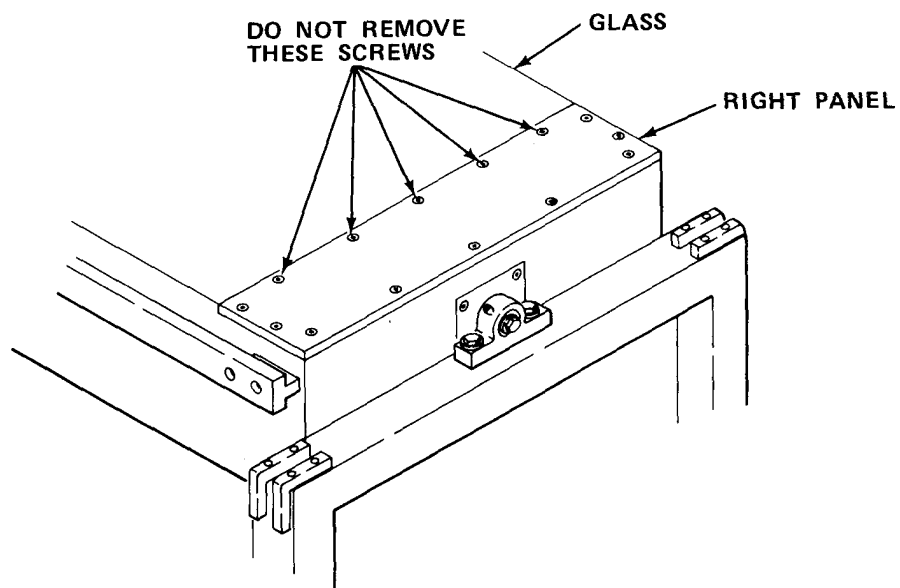
Tool Kit, Light Machine Repair  
Hex Head Key Wrench Set  
Nut Driver Set  
1/4 in. Drive Ratchet  
3/8 in. Socket, 1/4 in drive

SUPPLIES: Lamp Ballast

**WARNING**

Death or serious injury may occur from electrical shock unless power cord is unplugged before servicing.

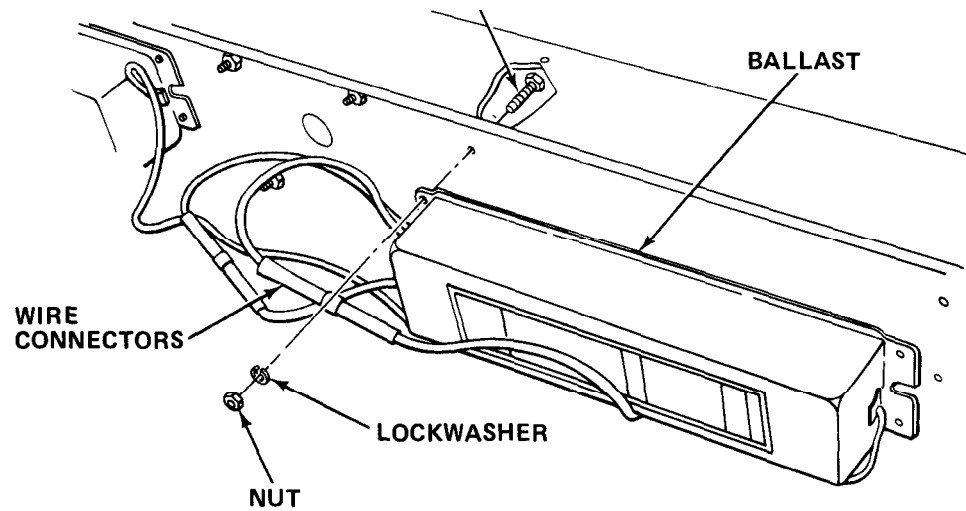
- a. Turn off power switch.
- b. Unplug power cord.



**CAUTION**

Removal of five socket head screws located closest to glass surface may result in damage to equipment.

- c. Remove nine socket head screws and right panel, but do not remove five socket head screws indicated in CAUTION and illustration.



- d. Remove socket head screws, lockwashers, and nuts that secure ballast.
- e. Lift ballast out of table to gain access to wire connectors.
- f. Tag and disconnect all wires.
- g\* Install new ballast.

**NOTE**

Be sure wires are not kinked.

- h. Reconnect all wires.
- i. Secure ballast with nuts, lockwashers, and socket head screws.
- j. Reinstall right panel and secure with socket head screws.
- k. Plug in power cord.

5-16.5 Replace Fluorescent Lamp/Starter.

MOS: 83FJ6, Reproduction Equipment Repairer

TOOLS:

Tool Kit, Light Machine Repair  
Flat Tip Screwdriver  
Hex Head Key Wrench Set

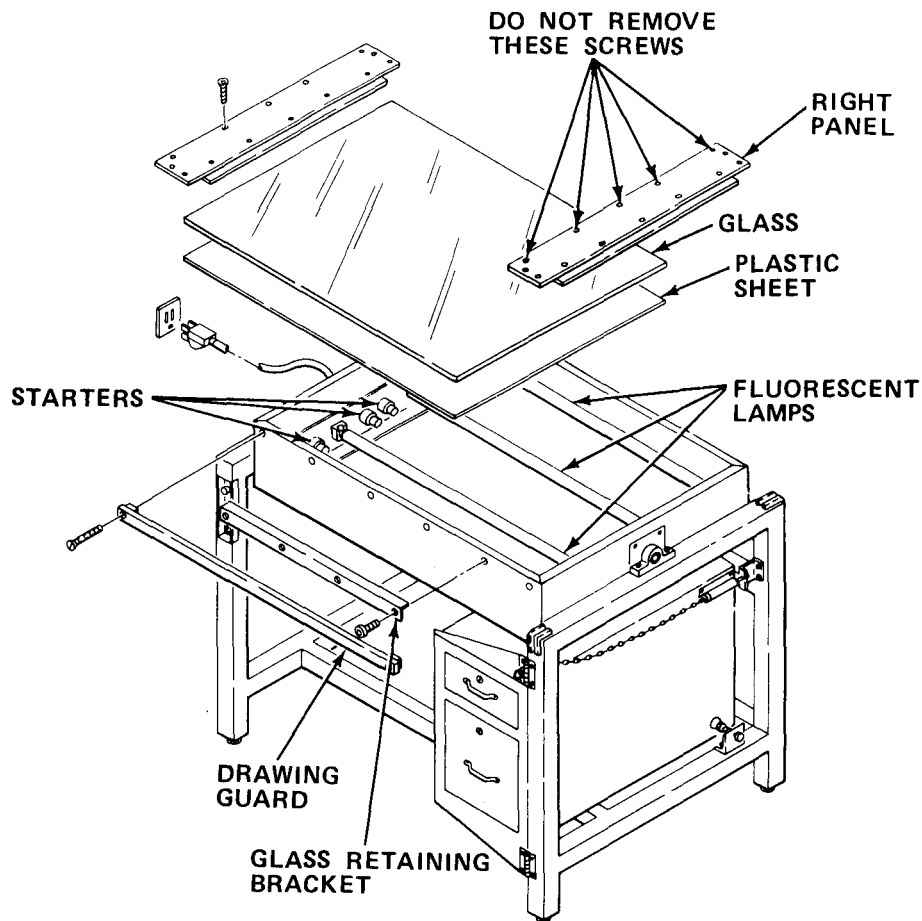
SUPPLIES: Fluorescent Lamp/Starter

- a. Place light surface up, turn on power switch, and note defective lamp.

**WARNING**

Death or serious injury may occur from electrical shock unless power cord is unplugged before servicing.

- b. Turn off power switch and unplug power cord.



CAUTION

Removal of five socket head screws located closest to glass surface may result in equipment damage.

- c. Remove nine socket head screws and remove right panel, but do not remove five socket head screws indicated in CAUTION and illustration.
- d. Remove socket head screws and drawing guard.
- e. Remove socket head screws and glass retaining bracket.
- f. Carefully slide glass and plastic sheet from retaining glass bracket and left panel.
- g. Remove defective lamp/starter.
- h. Install new lamp/starter.
- i. Reinstall plastic sheet and glass.
- j. Reinstall right panel and secure with socket head screws.
- k. Reinstall glass retaining bracket and secure with socket head screws.
- l. Reinstall drawing guard and secure with socket head screws.
- m. Plug in power cord.

5-16.6 Repair Tilt Lock Assembly.

MOS: 83FJ6, Reproduction Equipment Repairer

TOOLS:

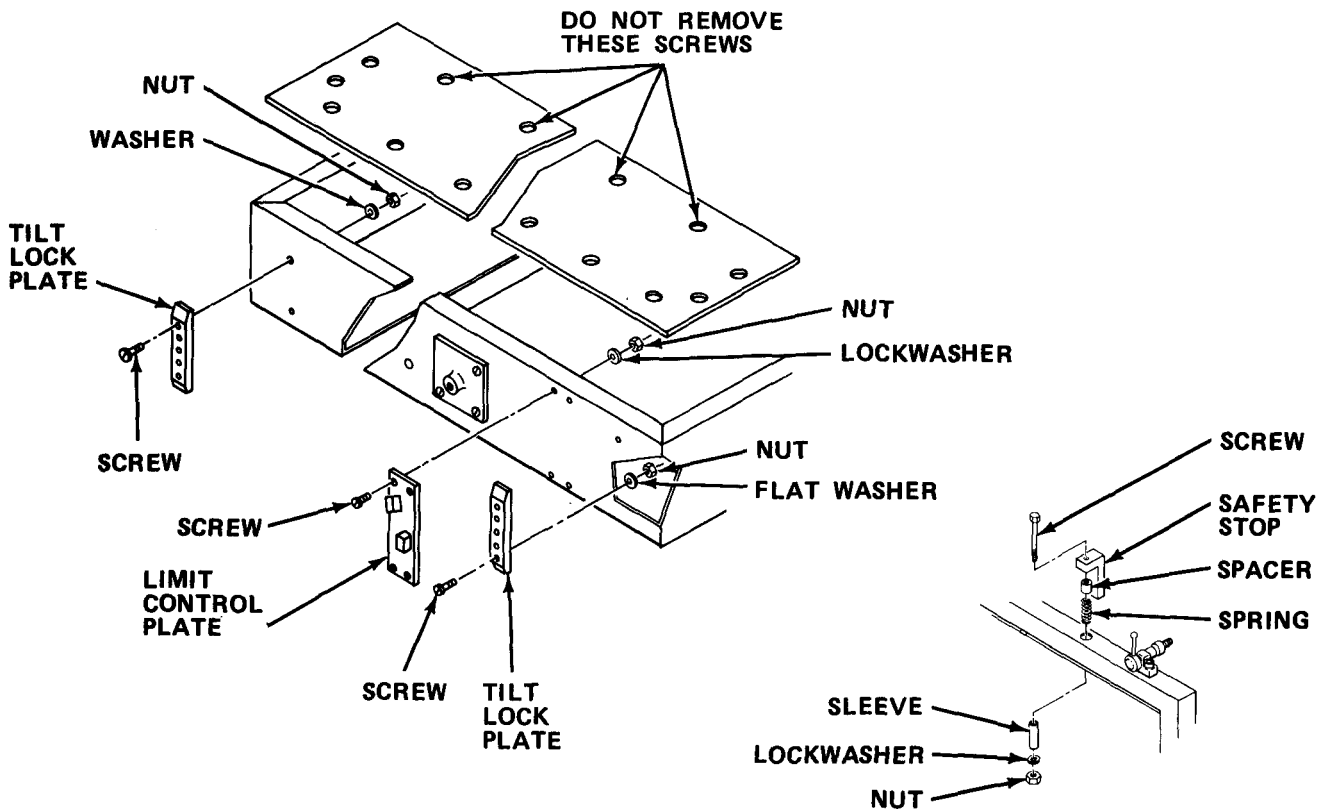
Tool Kit, Light Machine Repair  
Flat Tip Screwdriver  
Combination Wrench Set  
Hex Head Key Wrench Set

SUPPLIES: Tilt Plate  
Limit Control Plate  
Safety Stop

**WARNING**

Death or serious injury may occur from electrical shock unless power cord is unplugged before servicing.

- a. Turn off power switch.
- b. Unplug power cord.





CAUTION

Removal of five socket head screws located closest to glass surface may result in damage to equipment.

- c. Remove nine socket head screws and left panel, but do not remove five socket head screws indicated in CAUTION and illustration.
- d. Pull cabinet assembly lock release and swing cabinet assembly out so that it is not under table.

## NOTE

Tilt locking plates are not interchangeable and must be replaced in same positions.

- e. Remove upper screws, nuts, and washers from defective tilt locking plate.
- f. Tilt table top as necessary and remove defective tilt lock plate by removing lower screws, nuts, and washers.
- g. Install new tilt locking plate, and secure with washers, nuts, and screws.
- h. Check position of tilt lock plate and readjust if required.
- i. Remove defective limit control plate by removing screws, washers, and nuts.
- j. Install new limit control plate. Secure with nuts, washers, and screws.
- k. Reinstall left panel and secure with nine socket head screws.

## NOTE

Use care in disassembly of safety stop to prevent spring from falling inside frame.

- l. Remove defective safety stop by removing nut, lockwasher, sleeve, spring, spacer, and screw.
- m. Install new safety stop. Secure with screw, spacer, spring, sleeve, lockwasher, and nut.
- n. Swing cabinet assembly to its normal position under table.
- o. Plug in power cord.

5-16.7 Replace Pillow Block Assembly.

MOS: 83FJ6, Reproduction Equipment Repairer

TOOLS:

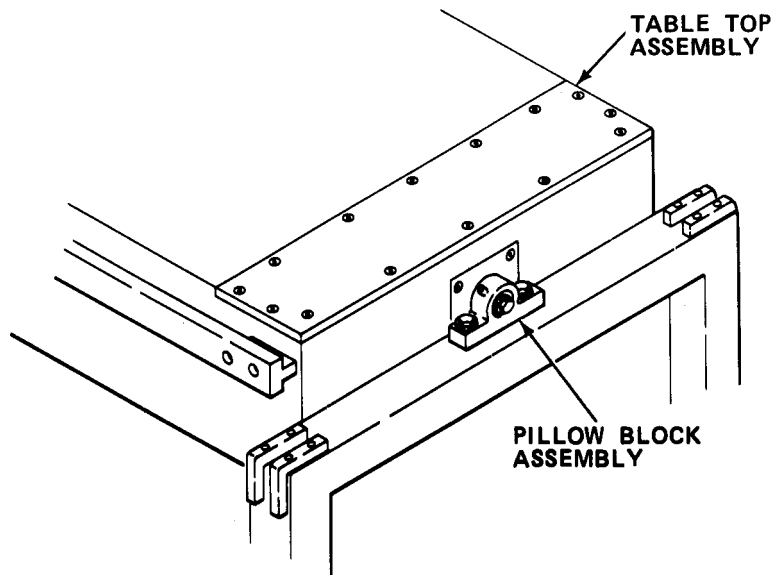
Tool Kit, Light Machine Repair  
Combination Wrench Set  
Hex Head Key Wrench Set  
Grease Gun

SUPPLIES: Pillow Block Assembly  
GAA Grease (Item 16, Appendix E)

WARNING

Death or serious injury may occur from electrical shock unless power cord is unplugged before servicing.

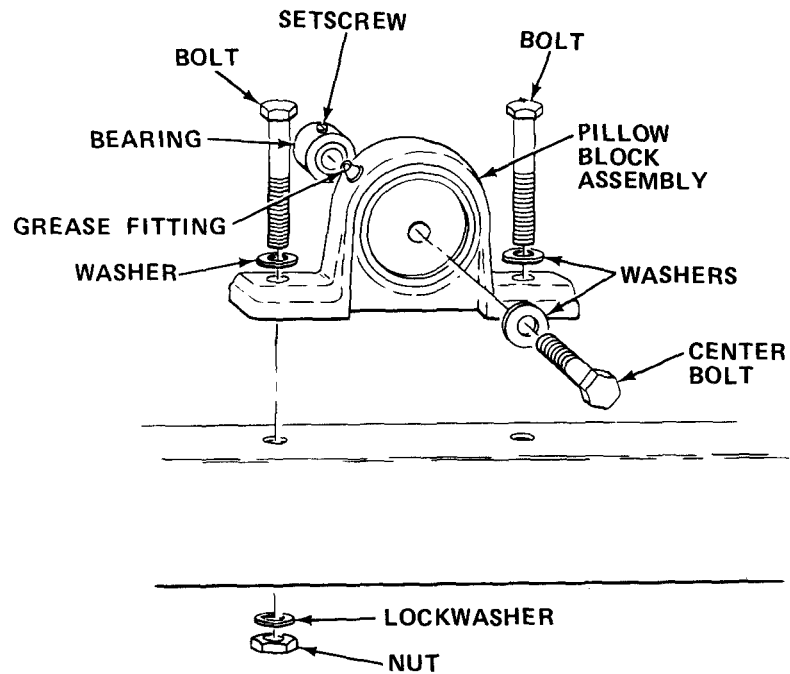
- a. Turn off power switch.
- b. Unplug power cord.



CAUTION

Table top assembly must be supported with drafting surface down to prevent table top from falling, causing equipment damage.

- c. Support table top assembly.
- d. Loosen, but do not remove socket head setscrew.



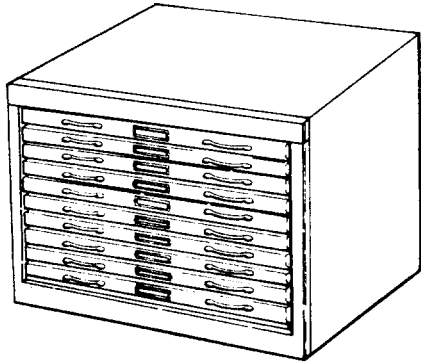
- e. Remove center bolt and washer.
- f. Remove bolts, washers, lockwashers, and nuts, and remove defective pillow block assembly.
- g. Install new pillow block assembly, and secure with nuts, lockwashers, washers, and bolts.
- h. Grease bearing (Paragraph 5-11.1).
- i. Reinstall washer and center bolt.
- j. Tighten socket head setscrew.
- k. Remove table top assembly supports.

5-17. PREPARATION FOR STORAGE OR SHIPMENT. Contact your battalion for packing and shipping instructions.

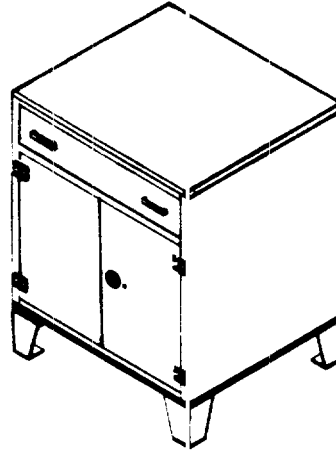
Section V DIRECT/GENERAL SUPPORT MAINTENANCE

There are no direct/general support maintenance procedures assigned for this equipment.

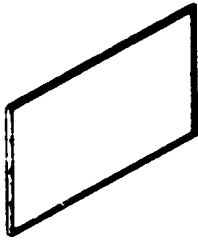




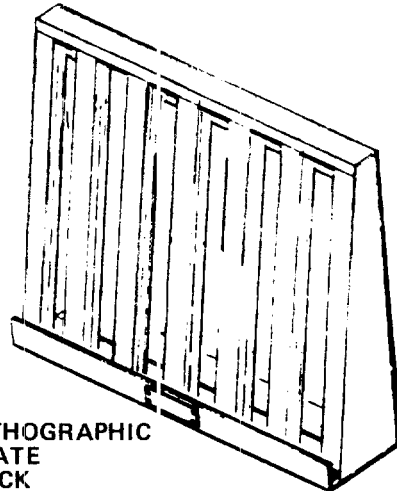
TEN-DRAWER  
PHOTOLITHOGRAPHIC  
CABINET



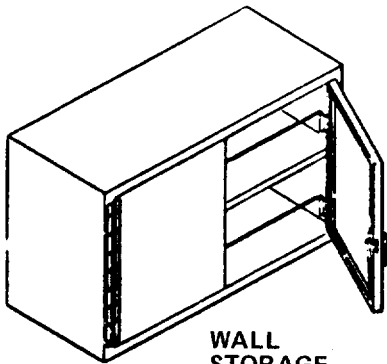
ONE-DRAWER  
PHOTOLITHOGRAPHIC  
CABINET



CORKBOARD



LITHOGRAPHIC  
PLATE  
RACK



WALL  
STORAGE  
CABINET



ROTARY  
DRAFTING  
CHAIR

## CHAPTER 6

## FURNITURE AND CABINETS

## Section I. INTRODUCTION

## 6.1.1 GENERAL INFORMATION

6.1.1.1 SCOPE. This chapter contains the description of all furniture and cabinets contained in this section.

6.1.1.2 WALL STORAGE CABINET. Used for miscellaneous storage. There are two shelves. The two doors are held shut by a handle-type latch. Dimensions:

Width	30 in. (762mm)
Depth	12 in. (304.8 mm)
Height	18 in. (457.2 mm)

6.1.1.3 TEN-DRAWER PHOTOLITHOGRAPHIC CABINET. Used for the storage of photolithographic materials and supplies. The cabinet has ten sliding drawers. Dimensions:

Width	37 in. (939.8 mm)
Depth	32 in. (812.8 mm)
Height	34 in. (836.6 mm)

6.1.1.4 ONE-DRAWER PHOTOLITHOGRAPHIC CABINET. Used for the storage of photolithographic materials and supplies. The cabinet has one sliding drawer. Dimensions:

Width	32.12 in. (892.05 mm)
Depth	28.12 in. (714.24 mm)
Height	40.5 in. (1028.7 mm)

6.1.1.5 CORKBOARD. Wall-mounted. Dimensions:

Width	60 in. (1524 mm)
Height	36 in. (914.4 mm)

6. 1. 1. 6 LITHOGRAPHIC PLATE RACK. Used for vertical storage of lithographic plates. Dimensions:

Width	35 in. (889mm)
Depth	8.5 in. (215.9 MM)
Height	30 in. (762mm)

6. 1. 1. 7 ROTARY DRAFTING CHAIR. Provides seating for drafting personnel. It has adjustable seat height and back position. Dimensions:

Width	17.12 in. (434.8 MM)
Depth	17.12 in. (434.8 mm)
Height	42 in. (1066.8 MM), Max 36 in. (914.4 MM), Min



Section II. OPERATOR'S MAINTENANCE INSTRUCTIONS

6.2.1 LUBRICATION INSTRUCTIONS. This equipment does not require periodic lubrication.

6.2.2 MAINTENANCE PROCEDURES

6.2.2.1 INSPECT CABINETS AND FURNITURE. Inspect cabinets and furniture for structural damage, rust, and proper operation of all latches, hinges, and adjustment mechanisms.

Section III. ORGANIZATIONAL MAINTENANCE INSTRUCTIONS

6.3.1 MAINTENANCE PROCEDURES. This section contains the step-by-step procedures for performing Organizational Maintenance for the furniture and cabinets. Personnel required are listed only if the task requires more than one. If personnel are not listed, it means one person can do the task.

INDEX

PROCEDURE	PARAGRAPH
Replace Piano Hinge . . . . .	6.3.1.1
Replace Handle Latch . . . . .	6.3.1.2

6.3.1.1 REPLACE PIANO HINGE.

TOOLS: Tool Kit, Mechanic's  
Rivet Gun

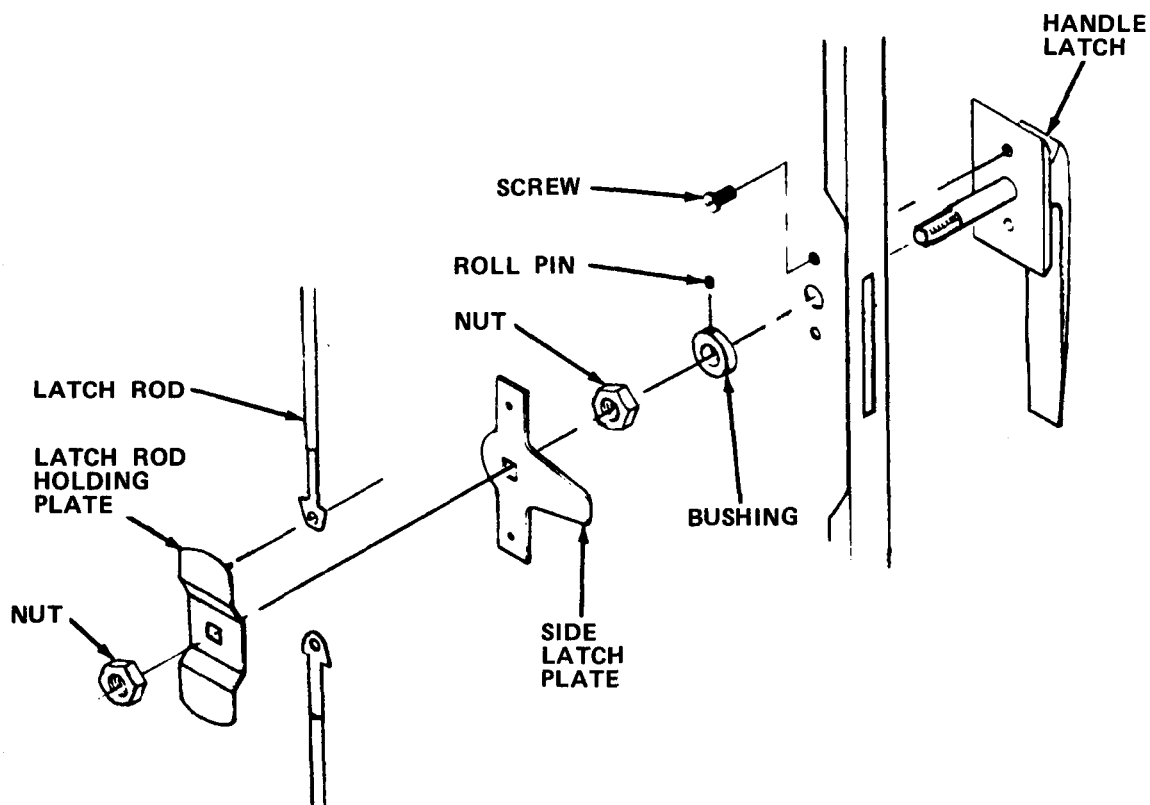
SUPPLIES: Hinge  
Rivets (5/32 in.)

1. Drill out 16 rivets, using no. 22 twist drill, and remove hinge.
2. Install new hinge. Secure to cabinet with new rivets.

6.3.1.2 REPLACE HANDLE LATCH.

TOOLS: Tool Kit, Mechanic's

SUPPLIES: Handle-Type Latch

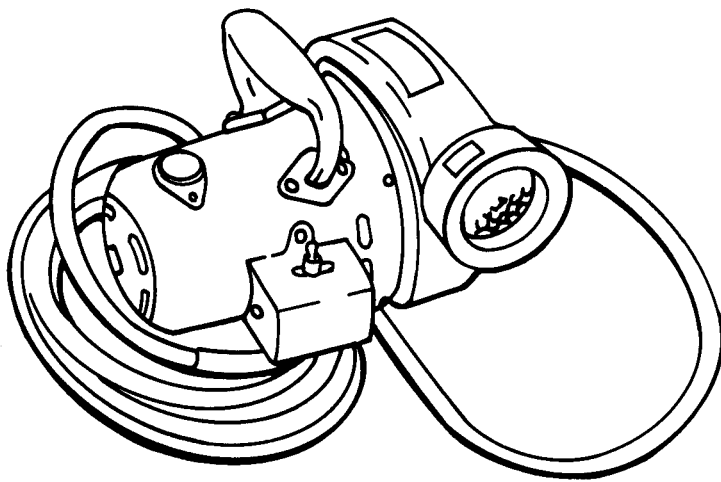
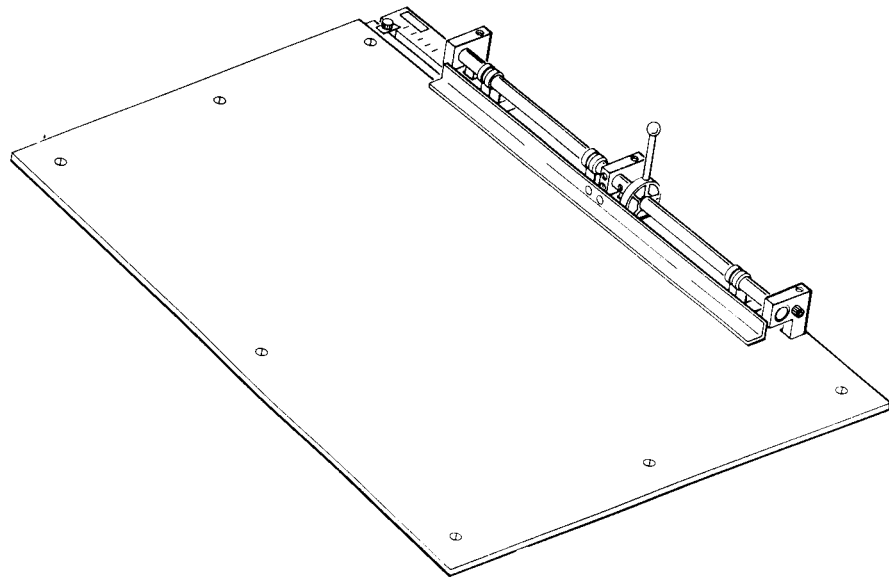


1. Remove nut which secures latch rod holding plate.
2. Remove latch rod holding plate and latch rods.
3. Remove side latch plate.
4. Remove two screws which secure handle latch to door and remove latch.
5. Install new handle latch and two screws which attach latch to door.

6. Install side latch plate.
7. Install latch rod holding plates and latch rods.
8. Install nut which secures latch rod holding plates.







CHAPTER 7

SUPPORT ITEMS

Section I. INTRODUCTION

7.1.1 GENERAL INFORMATION

7.1.1.1 SCOPE. This chapter covers the support items contained in this section and consists of the following equipment:

- a. Carlson Cartographic Pin Punch Register.
- b. Model 3400 Vacuum Cleaner.

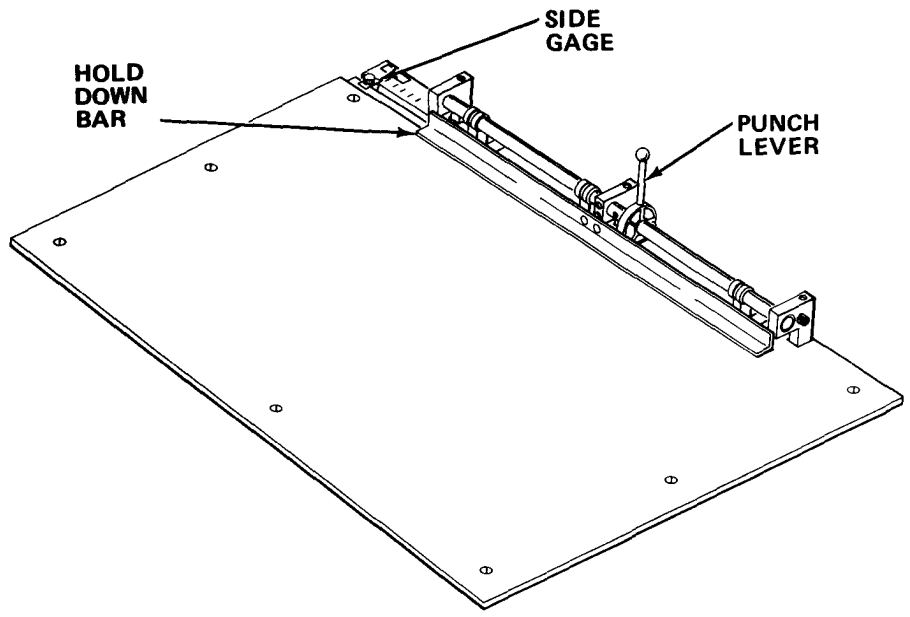
Section II. OPERATING INSTRUCTIONS

7.2.1 LUBRICATION INSTRUCTIONS. This equipment does not require periodic lubrication.

7.2.2 DESCRIPTION AND USE OF OPERATOR'S CONTROLS AND INDICATORS.

7.2.2.1 PIN PUNCH REGISTER.

CONTROL OR INDICATOR	FUNCTION
----------------------	----------



Punch Lever

Operates an eccentric which presses down on punch pin and forces it through material to be punched.

Side Gage

Positions material for proper positioning of punch holes.

Hold Down Bar

Secures material in place during operation.

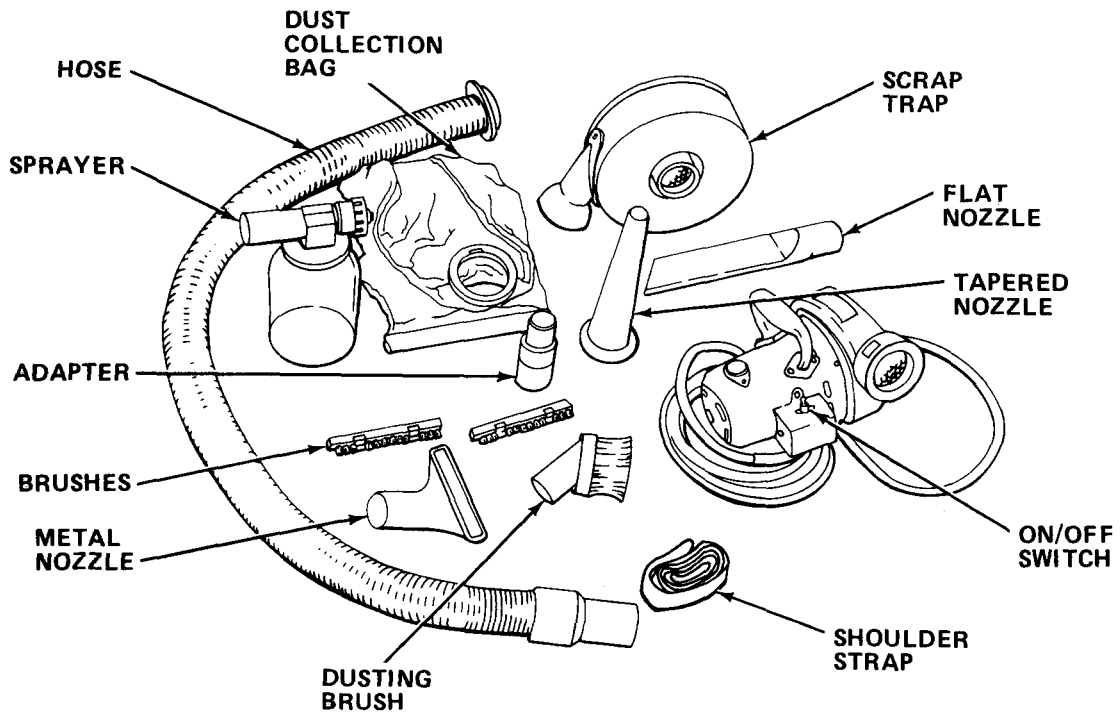


7.2.2 DESCRIPTION AND USE OF OPERATOR'S CONTROLS AND INDICATORS, CONT

7.2.2.2 VACUUM CLEANER.

CONTROL OR INDICATOR

FUNCTION



Sprayer

Sprays liquids when hooked to blower side of vacuum cleaner.

Flexible Hose

Directs airflow to hard-to-reach areas.

Dust Collection Bag

Collects and holds dust and dirt.

Scrap Trap

Traps large particles before they enter fan.

Flat Nozzle

Used for hard-to-reach areas.

Tapered Blower Nozzle

Directs airflow.

On/Off Switch

Turns power on or off.

Shoulder Strap

Attaches to vacuum cleaner for easier carrying.

CONTROL OR INDICATOR	FUNCTION
Round Dusting Brush	Used for light dust and dirt.
Metal Nozzle	Used for large, flat surfaces.
Brushes	Used on metal nozzle.
Adapter	Connects various attachments to hose.

7.2.3 OPERATOR'S PREVENTIVE MAINTENANCE CHECKS AND SERVICES.

- a. Always keep in mind the WARNINGS and CAUTIONS when performing PMCS. Table 7-1 lists the PMCS procedures to be performed by the operator. Be sure to perform the PMCS at the frequency indicated by the INTERVAL codes in the table.
- b. If your equipment fails to operate, troubleshoot with the proper equipment. Report any deficiencies in accordance with DA PAM 738-750.
- c. The numbers found in the ITEM NUMBER column shall be used as a source of item numbers for the TM ITEM NUMBER column on DA Form 2404, Equipment Inspection and Maintenance Worksheet, in recording the results of PMCS.

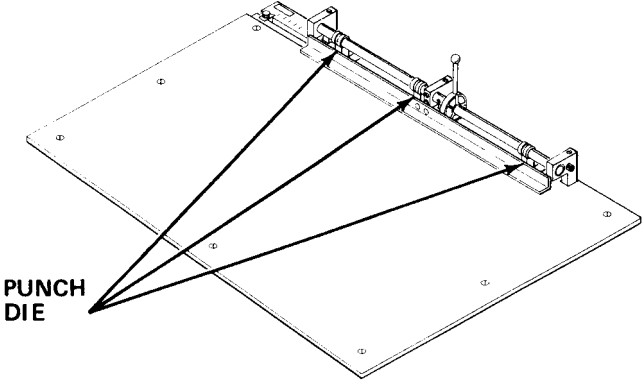
Table 7-1. OPERATOR'S PREVENTIVE MAINTENANCE CHECKS AND SERVICES

B - Before  
D - During  
A - After

W - Weekly  
M - Monthly  
Q - Quarterly

AN - Annual ly  
S - Semi annual ly  
BI - Biennial ly

(Number) - Hundreds of Hours

ITEM NO.	INTERVAL	ITEM TO BE INSPECTED  PROCEDURE	For Readiness Reporting, Equipment Is Not Ready/ Available If:
1	B/A	<p><u>SUPPORT ITEMS</u></p> <p>INSPECT PIN PUNCH REGISTER DIE.</p>  <p>Check punch die for buildup of punched out material and clean as required.</p>	
2	Q	<p><u>Vacuum Cleaner.</u> Inspect vacuum cleaner for damage to housing, frayed or worn power cord, and proper operation of motor.</p>	<p>Housing is cracked or broken. Power cord is frayed, worn or damaged. Motor is noisy or operates improperly.</p>

#### 7. 2. 4 OPERATION UNDER USUAL CONDITIONS.

##### 7. 2. 4. 1 PIN PUNCH REGISTER.

1. Remove from wall mount to working surface and attach punch lever.
2. Set side gage to desired position.
3. Insert material into throat.
4. Press punch lever down and punch register holes.

##### 7. 2. 4. 2 VACUUM CLEANER.

1. Using as vacuum.
  - a. Attach dust collection bag to air discharge opening.
  - b. Remove protective screen lock from air intake opening and attach scrap trap to that opening.
  - c. Attach swivel end of hose to scrap trap by turning lock to right until secure.
  - d. Attach required tool to other end of hose.
  - e. Insert plug into 120 V ac wall outlet and turn on/off switch to on.
2. Using as blower.
  - a. Attach tapered rubber nozzle to discharge opening.
  - b. Attach protective screen lock to air intake opening.
  - c. Insert plug into 120 V ac wall outlet and position on/off switch to on.
3. Using as sprayer.
  - a. Attach protective screen lock to air intake opening.
  - b. Attach swivel end of hose to air discharge opening by turning lock to right until secure.
  - c. Attach sprayer to other end of hose.

#### NOTE

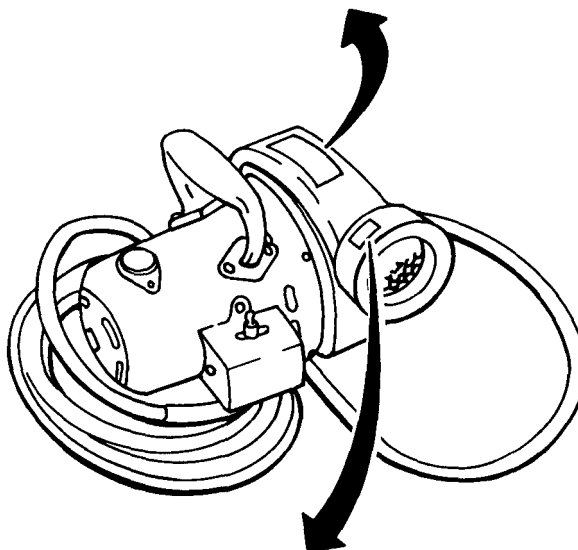
Size of spray pattern is determined by adjusting screw located on top of sprayer.

- d. Insert plug into 120 V ac wall outlet and turn on/off switch to on.

## 7.2.4.3 OPERATING INSTRUCTIONS ON DECALS AND INSTRUCTION PLATES.

**WARNING**

THIS DEVICE IS NOT TO BE USED IN "HAZARDOUS LOCATIONS" AS DEFINED BY UNDERWRITERS LABORATORIES. IT SHOULD BE GROUNDED IN ACCORDANCE WITH PROVISIONS OF THE NATIONAL ELECTRIC CODE, OR ANY APPLICABLE LOCAL CODE, AND MAINTAINED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

**WARNING!**

**ELECTRIC SHOCK COULD  
OCCUR IF USED ON  
WET SURFACES. DO  
NOT EXPOSE TO RAIN.  
STORE INDOORS.**

Section III. OPERATOR MAINTENANCE

7.3.1 LUBRICATION INSTRUCTIONS. This equipment does not require lubrication.

7.3.2 TROUBLESHOOTING PROCEDURES.

- a. The table lists the common malfunctions which you may find during operation or maintenance of the vacuum cleaner. You should perform the test/inspections and corrective actions in the order listed.
- b. This manual cannot list all malfunctions that may occur, nor all test or inspections and corrective actions. If a malfunction is not listed or is not corrected by listed corrective actions, notify your supervisor.

Table 7-2. TROUBLESHOOTING

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
VACUUM CLEANER MOTOR DOES NOT OPERATE.		
	Step 1. Check power cord.	(a) If plugged in, proceed to step 2. (b) Plug in power cord.
	Step 2. Check position of power switch.	(a) If turned on, proceed to step 3. (b) Turn power switch on.
	Step 3. Check circuit breaker position in circuit breaker box.	(a) If turned off or tripped, turn circuit breaker on. (b) If turned on, refer to supervisor.

7.3.3 There are no assigned Operator's Maintenance Procedures.

APPENDIX A

REFERENCES

A-1. SCOPE. This appendix lists all forms, technical manuals and other publications referenced in this manual, as well as other pertinent information.

A-2. PUBLICATION INDEX. The following index should be consulted frequently for the latest changes or revisions and for new publications relating to the material covered in this technical manual.

Consolidated Index of Army Publications and Blank Forms . . . . . DA PAM 310-1

A-3. FORMS. Refer to DA Pam 738-750 - The Army Maintenance Management System (TAMMS) - for instructions on the use of maintenance forms pertaining to this material.

Recommended Changes to Publications and Blank Forms . . . . . DA Form 2028

Recommended Changes to Equipment Technical Publications . . . . . DA Form 2028-2

Hand Receipt/Annex Number. . . . . DA Form 2062

Equipment Inspection and Maintenance Worksheet . . . . . DA Form 2404

Quality Deficiency Report . . . . . SF368

A-4. TECHNICAL MANUALS

Administrative Storage of Equipment . . . . . TM 740-90-1

Procedures for Destruction of Equipment to Prevent  
Enemy Use. . . . . TM 750-244-3

Operator's, Organizational, Direct Support and  
General Support Maintenance Manual, Air  
Conditioner, Horizontal, Compact, 208-Volt,  
3-Phase, 18,000 BTUH Cooling, 12,000 BTUH Heating . . . . . TM 5-4120-367-14

Organizational, Direct Support and General Support  
Maintenance Repair Parts and Special Tools List  
(Including Depot Maintenance Repair Parts and  
Special Tools) for Air Conditioner/Heater . . . . . TM 5-4120-367-24P

Operator's, Organizational, Direct Support and  
General Support Maintenance Manual for Chassis,  
Semi-Trailer, Container Transporter (ADCOR) . . . . . TM 5-2330-305-14

Organizational, Direct Support and General Support  
Maintenance Repair Parts and Special Tools List  
(Including Depot Maintenance Repair Parts and  
Special Tools List) for Chassis, Semi-Trailer,  
Container Transporter (ADCOR) . . . . . TM 5-2330-305-24P

Organizational, Direct Support and General Support  
Maintenance Repair Parts and Special Tools List  
(RPSTL) (Including Depot Maintenance Repair Parts  
and Special Tools List) for Plate Process Section . . . . . TM 5-3610-259-24P

Hand Receipt Covering Contents of Components of End  
Item (COEI), Basic Issue Items (BII) and Additional  
Authorization List (AAL) for Plate process Section . . . . . TM 5-3610-259-14-HR

Lubrication Order for Plate Process Section . . . . . LO 5-3610-259-12

Components List for Plate Process Section . . . . . SC-3610-97-CL-E25

A-5 . MISCELLANEOUS PUBLICATIONS. The following Technical Bulletins, Technical  
Manuals and Field Manuals contain information pertinent to the major items of hard-  
ware and/or accessory equipment contained in this section.

a. Maintenance and Repair

Organizational Care, Maintenance and Repair of  
Pneumatic Tires, Inner Tubes and Radial Tires . . . . . TM 9-2610-200-20

Metal Body Repair and Related Operations . . . . . FM 43-2

Welding Theory and Application . . . . . TM 9-237

Painting Instructions for Field Use . . . . . TM 43-0139

Inspection, Care and Maintenance of Antifriction  
Bearings . . . . . TM 9-214

b. Cold Weather Operation and Maintenance

Basic Cold Weather Manual . . . . . FM 31-70

Northern Operations. . . . . FM 31-71

Operation and Maintenance of Ordnance Material in  
Extreme Cold Weather (0° to -65°F -- -18° to -54°C) . . . . . TM 9-207



c. Decontamination

Chemical, Biological and Radiological (CBR)  
Decontamination . . . . . TM 3-220

Nuclear, Biological and Chemical (NBC) Defense  
(Reprinted with Basic Incl. C1) . . . . . FM 21-40

d. General

Camouflage . . . . . FM 5-20

Use and Care of Hand Tools and Measuring  
Tools. . . . . TM 9-243



## MAINTENANCE ALLOCATION CHART

## Section I. INTRODUCTION

## B-1. GENERAL

a. This section provides a general explanation of all maintenance and repair functions authorized at various maintenance categories.

b. The Maintenance Allocation Chart (MAC) in Section II designates overall responsibility for the performance of maintenance functions on the identified end item or component. The implementation of maintenance functions upon the end item or component will be consistent with the assigned maintenance functions.

c. Section III lists the special tools and test equipment required for each particular maintenance function.

d. Section IV contains supplemental instructions and explanatory notes for a particular maintenance function.

B-2. MAINTENANCE FUNCTIONS. Maintenance functions will be limited to and defined as follows:

a. INSPECT. To determine the serviceability of an item by comparing its physical, mechanical and/or electrical characteristics with established standards through examination (e.g., by sight, sound, or feel).

b. TEST. To verify serviceability by measuring the mechanical or electrical characteristics of an item and comparing those characteristics with prescribed standards.

c. SERVICE. Operations required periodically to keep an item in proper operating condition, i.e., to clean (includes decontaminate, when required), preserve, drain, paint, or replenish fuel, lubricants, chemical fluids, or gases.

d. ADJUST. To maintain, within prescribed limits, by bringing into proper or exact position or by setting the operating characteristics to specified parameters.

e. ALIGN. To adjust specified variable elements of an item to bring about optimum or desired performance.

f. CALIBRATE. To determine and cause corrections to be made or to be adjusted on instruments or test, measuring and diagnostic equipment used in precision measurement. Consists of comparisons of two instruments, one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compared.

g. INSTALL. The act of emplacing, seating, or fixing into position an item, part or module (component or assembly) in a manner to allow proper functioning of an equipment or system.

h. REPLACE. The act of substituting a serviceable like-type part, subassembly or module (component or assembly) for an unserviceable counterpart.

i. REPAIR. The application of maintenance services<sup>1</sup>, including fault location/troubleshooting<sup>2</sup>, removal/installation, and disassembly/assembly<sup>3</sup> procedures, and maintenance actions<sup>4</sup> to identify troubles and restore serviceability to an item by correcting specific damage, fault, malfunction, or failure in a part, subassembly, module, (component or assembly), end item or system.

j. OVERHAUL. That maintenance effort (service/action) necessary to restore an item to a completely serviceable/operational condition as prescribed by maintenance standards in appropriate technical publications (i.e., DMWR). Overhaul is normally the highest degree of maintenance performed by the Army. Overhaul does not normally return an item to like-new condition.

k. REBUILD. Consists of those services/actions necessary for the restoration of unserviceable equipment to a like-new condition in accordance with original manufacturing standards. Rebuild is the highest degree of material maintenance applied to Army equipment. The rebuild operation includes the act of returning to zero those age measurements (hours/miles, etc) considered in classifying Army equipment/components.

### B-3. EXPLANATION OF COLUMNS IN THE MAC, SECTION II

a. COLUMN (1): GROUP NUMBER. Column (1) lists functional group code numbers, the purpose of which is to identify maintenance significant components, assemblies, subassemblies and modules with the next higher assembly. End item group number shall be "00".

b. COLUMN (2): COMPONENT/ASSEMBLY. Column (2) contains the names of components, assemblies, subassemblies, and modules for which maintenance is authorized.

c. COLUMN (3): MAINTENANCE FUNCTION. Column (3) lists the functions to be performed on the item listed in Column (2). (For detailed explanation of these functions, see paragraph B-2.)

<sup>1</sup>services - Inspect, test, service, adjust, calibrate and/or replace.

<sup>2</sup>Fault locate/troubleshoot - The process of investigating and detecting the cause of equipment malfunctioning; the act of isolating a fault within a system or unit under test (UUT).

<sup>3</sup>Disassemble/assemble - Encompasses the step-by-step taking apart (or breakdown) of a spare/functional group coded item to the level of its least componenty identified as maintenance significant (i.e., assigned an SMR code) for the category of maintenance under consideration.

<sup>4</sup>Actions - Welding, grinding, riveting, straightening, facing, remachining and/or resurfacing.

d. COLUMN (4): MAINTENANCE CATEGORY. Column (4) specifies, by the listing of a work time figure in the appropriate subcolumn(s), the category of maintenance authorized to perform the function listed in Column (3). This figure represents the active time required to perform that maintenance function at the indicated category of maintenance. **If** the number or complexity of the tasks within the listed maintenance function varies at different maintenance categories, appropriate work time figures will be shown for each category. The work time figure represents the average time required to restore an item (assembly, subassembly, component, module, end item or system) to a serviceable condition under typical field operation conditions. This time includes preparation time (including any necessary disassembly/assembly time), troubleshooting/fault location time, and quality assurance/quality control time in addition to the time required to perform the specific tasks identified for the maintenance functions authorized in the Maintenance Allocation Chart. The symbol designations for the various maintenance categories are as follows:

C	Operator or Crew
O	Organizational Maintenance
F	Direct Support Maintenance
H	General Support Maintenance
D	Depot Maintenance

e. COLUMN (5): TOOLS AND EQUIPMENT. Column (5) specifies by code those common tool sets (not individual tools) and special tools, TMDE and support equipment required to perform the designated function.

f. COLUMN (6): REMARKS. This column shall, when applicable, contain a letter code, in alphabetical order, which shall be keyed to the-remarks-contained in Section **IV**.

#### B-4. EXPLANATION OF COLUMNS IN TOOL AND TEST EQUIPMENT REQUIREMENTS, SECTION III

**a.** COLUMN (1): REFERENCE CODE. The tool and test equipment reference code correlates with a code used in the MAC, Section **II**, Column **(5)**.

**b.** COLUMN (2): MAINTENANCE CATEGORY. The lowest category of maintenance authorized to use the tool or test equipment.

**c.** COLUMN (3): NOMENCLATURE. Name or identification of the tool or test equipment.

**d.** COLUMN (4): NATIONAL STOCK NUMBER. The National stock number of the tool or test equipment.

**e.** COLUMN (5): TOOL NUMBER. The manufacturer's part number.

**B-5. EXPLANATION OF REFERENCE CODES, SECTION IV**

- a. COLUMN (1) : REFERENCE CODE. The code recorded in Column (6), Section **II**.
- b. COLUMN (2): REMARKS. This column lists information pertinent to the maintenance function being performed as indicated in the MAC, Section **II**.

Section II. MAINTENANCE ALLOCATION CHART

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY					(5) TOOLS AND EQPT	(6) REMARKS
			C	O	F	H	D		
00	PLATE PROCESS SECTION								
01	VAN BODY	Inspect Service Repair	.75 .62	.20 1.50	.50	4.00		1, 2, 3, 4 7, 8, 9, 14, 16	
	BOARDING LADDER ASSEMBLY	Replace Repair		.10 .50				2, 6, 9	
	ELECTRICAL SYSTEM	Inspect Service Repair	.25	.25 .25	.85			6, 3 4, 6, 11	
	BRACKET ASSEMBLY, POWER AND COMMUNICATIONS	Inspect Repair	.10	.30	2.00			3, 11	
	CIRCUIT BREAKER INSTALLATION	Inspect Repair	.05		.75			3, 11	
	PWR/COMM ELECTRICAL INSTALLATION	Inspect Repair	.05		.25			3, 11	
	PANEL ASSEMBLY PWR/COMM	Replace			3.08			2, 4, 11	
	POWER CABLE	Service		.25				3, 6	
	EMERGENCY LIGHT ASSEMBLY	Inspect Replace	.10	.30				3	
	LIGHT FIXTURE INSTALLATION	Inspect Repair Replace	.10 .10	.25				3, 11 3, 6, 11	

Section II. MAINTENANCE ALLOCATION CHART (Cont)

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY					(5) TOOLS AND EQPT	(6) REMARKS
			C	O	F	H	D		
	EXHAUST FAN INSTALLATION	Inspect Replace	.11	.30				3, 6, 9, 16	
	SUPPORT BRACKET ASSEMBLY, AIR CONDITION	Inspect Replace	.11		2.50			5, 15	
	AIR CONDITIONER	Inspect Replace	.80		1.50			5, 15	A
	AIR CONDITION AND MAKEUP AIR INSTALLA- TION	Inspect Service Repair	.12	.30	.50			6 6, 9	
	AIR CONDI- TIONING DUCT INSTALLATION	Inspect Service Repair	.17 .17				1.00	6, 9	
	BLACKOUT CURTAIN ASSEMBLY	Inspect Repair	.08	.25				6	
	PERSONNEL DOOR INSTALLATION	Inspect Repair	.08		3.00			2, 6, 9	
	REAR DOOR INSTALLATION	Inspect Repair		.08	2.50			2, 6, 9	



Section II. MAINTENANCE ALLOCATION CHART (Cont)

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY					(5) TOOLS AND EQPT	(6) REMARKS
			C	O	F	H	D		
			02	PLATEMAKER FLIP-TOP	Inspect Test Service Remove/ Install	0.1 0.3 0.1	0.1 2.0 1.0		
	VACUUM FRAME AND CENTER SECTION ASSEMBLY	Service Adjust Replace	0.1 0.4	1.0 0.7				6	12 6
	VACUUM FRAME	Replace		0.7				6	
	LATCH HOUSING ASSEMBLY	Replace		0.2				6	
	CONTROL PANEL ASSEMBLY	Replace		0.3				6	
	CIRCUIT BOARDS	Test Replace			0.2 0.7			6, 11 6	
	LOWER CABINET ASSEMBLY	Service Repair Replace	0.2	0.5 2.0 3.2				6, 13, 12 6, 11 6	
	3kW POWER SUPPLY	Replace		0.4	0.6			6	
	RELAY PANEL ASSEMBLY	Replace		0.5				6	
	LAMP DRAWER ASSEMBLY	Service Replace	0.1	0.2				12 6	

Section II. MAINTENANCE ALLOCATION CHART (Cont)

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY					(5) TOOLS AND EQPT	(6) REMARKS
			C	O	F	H	D		
03	RACK ASSEMBLY	Repair		.10				6	
	SPARE GLASS HOLDER	Inspect Replace	.10	.25				6	
	PLATE FINISHING TABLE	Inspect	.20	.10				6	
		Test	.10	.20				6, 11	
		Service	.10	.30				6	
Repair Replace		.20	1.00 1.00				6 6		
04	SINK	Inspect	.30						
		Repair		1.50				2	
		Replace		1.50				6, 16, 17	
05	WATER TANK	Inspect	.20						
		Repair		1.00	2.00			2, 6	
		Replace		1.50				2, 16, 17	
	DRAFTING, SCRIBING/TRACING TABLE	Inspect	.10					13, 19	
		Service Replace Repair	.17 1.75	1.00				2 2, 6	
06	TABLE TOP ASSEMBLY	Inspect	.08						
		Replace		.33				6, 13	
		Repair		.33				6	
07	PILLOW BLOCK	Replace		1.75				6, 19	
		FURNITURE AND CABINETS	Inspect	.33					
	Repair			2.50				2	
07	SUPPORT ITEMS	Inspect	.02						
		Replace		.75				6	

Section III. TOOL AND TEST EQUIPMENT REQUIREMENTS

(1) TOOL OR TEST EQUIPMENT REFERENCE CODE	(2) MAINTENANCE CATEGORY	(3) NOMENCLATURE	(4) NATIONAL/NATO STOCK NUMBER	(5) TOOL NUMBER
1	0	Level, Carpenter's	5210-00-239-0892	
2	0	General Mechanic's Automotive Tool Kit	5180-00-177-7033	SC5180-90- CL-N26
3	O, F, H	Electronic Equipment Tool Kit	5180-00-605-0079	SC5180-91- CL-S21
4	F, H	Electronic Equipment Tool Kit	5180-00-610-8177	SC5180-91- CL-R07
5	O, F, H	Service Refrigeration Unit Tool Kit	5180-00-596-1474	SC5180-90- CL-N18
6	O, F, H	Light Machine Repair Tool Kit	5180-00-596-1540	SC5180-90- CL-N27
7	c	Pliers	5120-00-223-7396	276
8	c	Shears, Straight	5110-00-162-2207	22
9	O, F	Rivet Gun	5120-00-017-2849	
10	c	Screwdriver, Cross Tip	5120-00-764-8102	2753
11	F	Multimeter	6625-01-128-8015	3435A
12	c	Screwdriver, Flat Tip	5120-00-234-8910	1006
13	c	Key Set, Socket Head Screw	5120-00-729-6392	
14	o	Brush, Wire	7920-00-282-9246	
15	O, F, H	Soldering Gun Kit	3439-00-930-1638	
16		Scraper		
17		Tool Kit, Pipe Fitters, General	5180-00-596-1501	SC5180-90- CL-NB
18	o	Truck, Hand Lift		MSK 20-42- 5

Section III. TOOL AND TEST EQUIPMENT REQUIREMENTS (Cont)

(1) TOOL OR TEST EQUIPMENT REFERENCE CODE	(2)  MAINTENANCE CATEGORY	(3)  NOMENCLATURE	(4)  NATIONAL/NATO STOCK NUMBER	(5)  TOOL NUMBER
19	C, O	<b>Grease Gun</b>	<b>4930-00-965-0288</b>	
20	c	<b>Wrench, Adjustable</b>	<b>6670-00-238-9777</b>	1500559

## Section IV. REMARKS

REFERENCE CODE	REMARKS
A	See TM 5-4120-367-14 for maintenance procedures.



## APPENDIX C

## COMPONENTS OF END ITEM AND BASIC ISSUE ITEMS LISTS

## Section I. INTRODUCTION

C-1. SCOPE. This appendix lists components of end item and basic issue items for the Plate Process Section to help you inventory items required for safe and efficient operation.

C-2. GENERAL. The Components of End Item and Basic Issue Items Lists are divided into the following sections:

a. SECTION II: COMPONENTS OF END ITEM. This listing is for informational purposes only and is not authority to requisition replacements. These items are part of the end item but are removed and separately packaged for transportation or shipment. As part of the end item, these items must be with the end item whenever it is issued or transferred between property accounts. Illustrations are furnished to assist you in identifying the items.

b. SECTION III: BASIC ISSUE ITEMS (BII). These are the minimum essential items required to place the Plate Process Section in operation, to operate it and to perform emergency repairs. Although shipped separately packaged, BII must be with the Plate Process Section during operation and whenever it is transferred between property accounts. The illustrations will assist you with hard-to-identify items. This manual is your authority to request/requisition replacement BII based on TOE/MTOE authorization of the end item.

C-3. EXPLANATION OF COLUMNS. The following provides an explanation of columns found in the tabular listings:

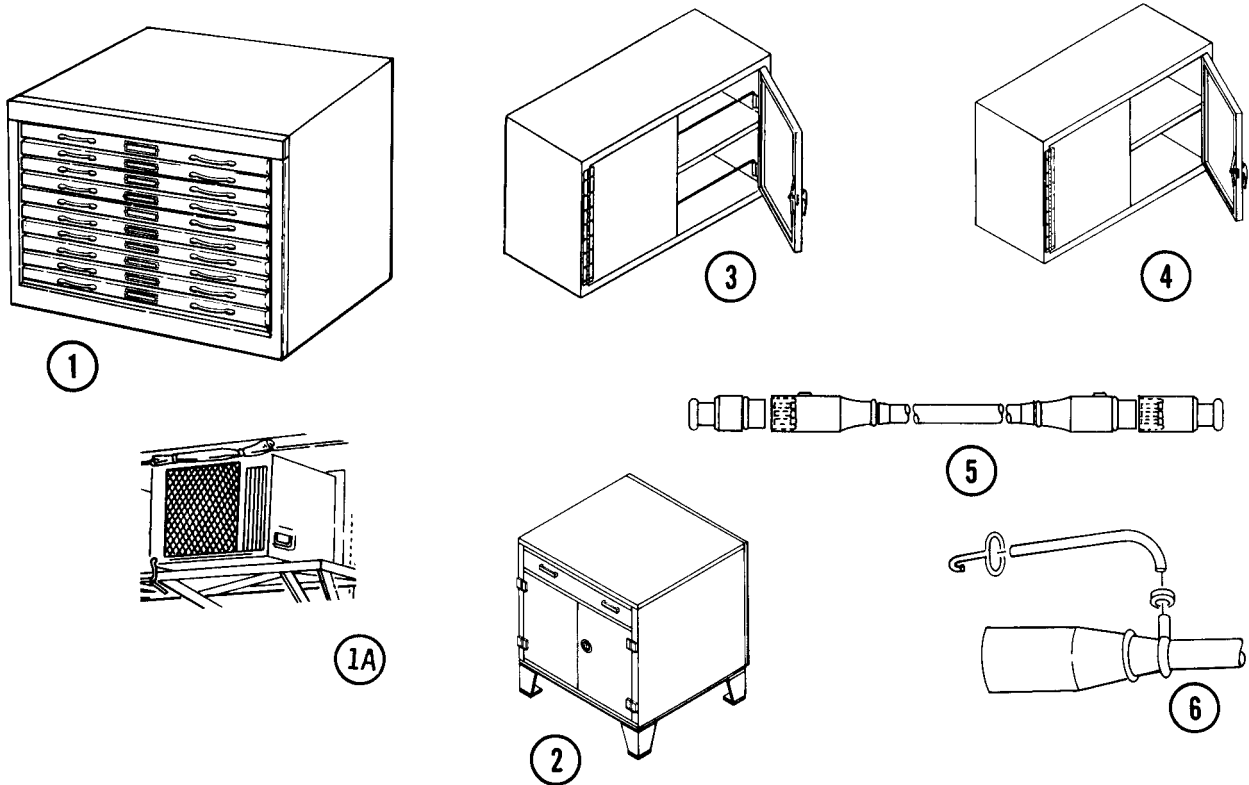
a. COLUMN (1): ILLUSTRATION NUMBER (ILLUS NUMBER). This column indicates the number of the illustration in which the item is shown.

b. COLUMN (2): NATIONAL STOCK NUMBER. Indicates the National stock number assigned to the item and will be used for requisitioning purposes.

c. COLUMN (3): DESCRIPTION. Indicates the National item name and, if required, a minimum description to identify and locate the item. The last line for each item indicates the FSCM (in parentheses) followed by the part number.

d. COLUMN (4): UNIT OF MEASURE (U/M). Indicates the measure used in performing the actual operational/maintenance function. This measure is expressed by a two-character alphabetical abbreviation (e.g., ea, in., pr).

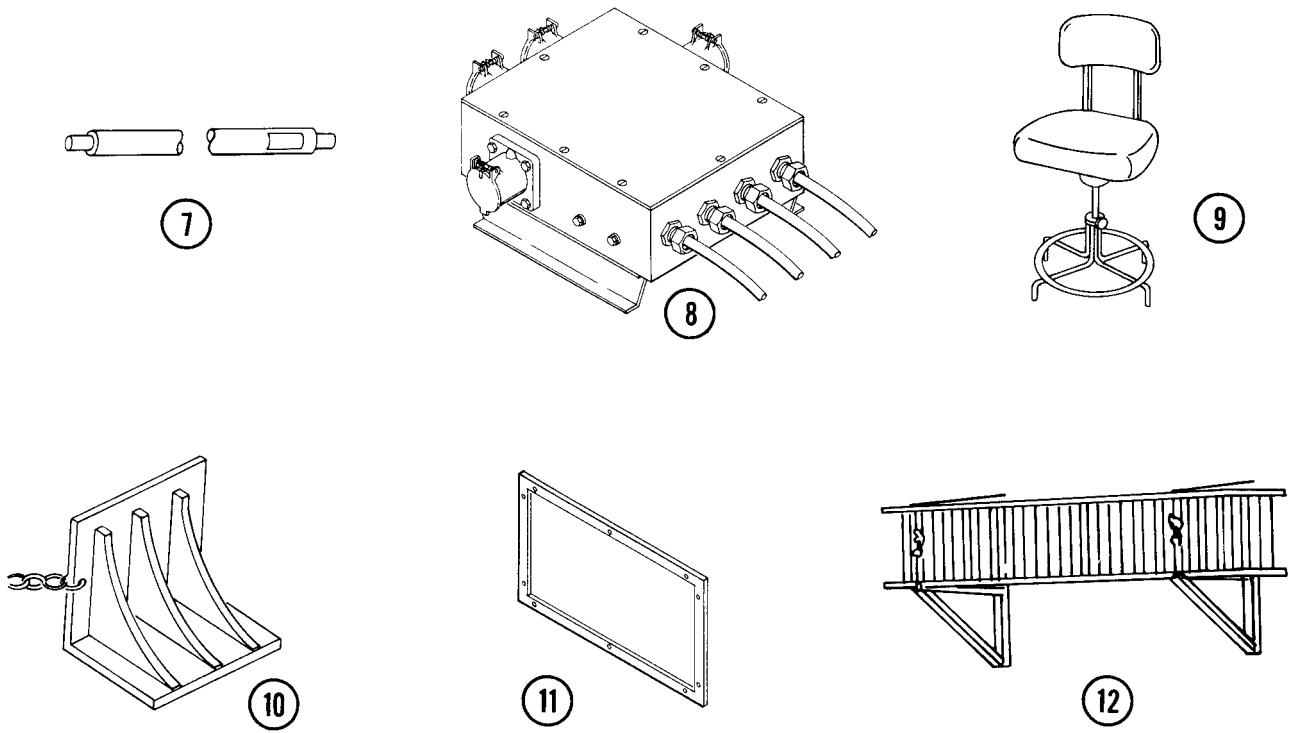
e. COLUMN (5): QUANTITY REQUIRED (QTY RQR). Indicates the quantity of the item authorized to be used with/on the equipment.



Section II. COMPONENTS OF END ITEM

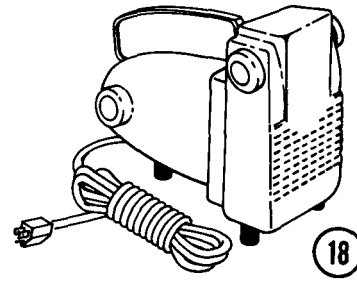
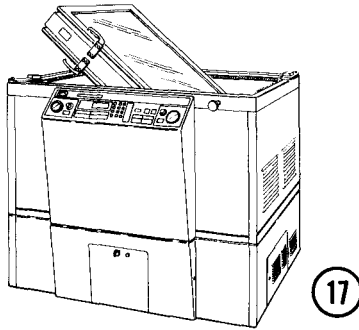
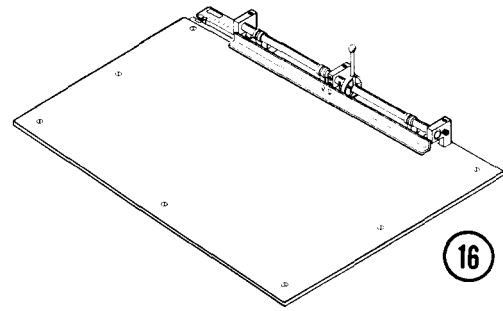
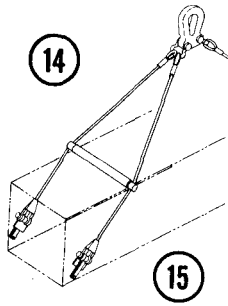
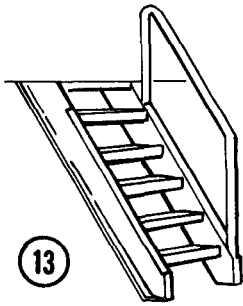
(1) ILLUS NUMBER	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION FSCM AND PART NUMBER	(4) U/M	(5) QTY RQR
1		Cabinet, Photographic (97403) 13225E5160	ea	1
1A	4120-00-974-7206	Air Conditioner (81349) MIL-M-52767	ea	2
2	7125-00-091-9433	Cabinet, Photographic Storage (97403) 13225E4441	ea	1
3	7125-00-286-5259	Cabinet, Storage (97403) 13225E3150	ea	1
4	7125-01-219-6799	Cabinet, Storage (97403) 13225E4648	ea	1
5	6150-00-134-0847	Cable Assy, Power (19207) 11601643	ea	1
6	6150-01-221-6032	Cable Assy, Power, Modified (97403) 13225E4619	ea	1





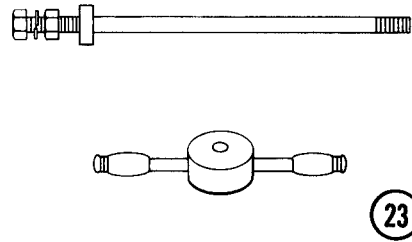
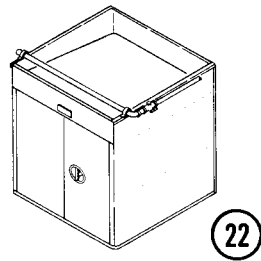
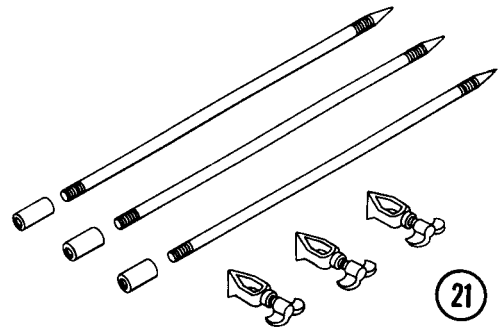
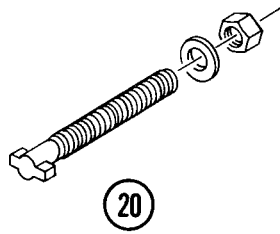
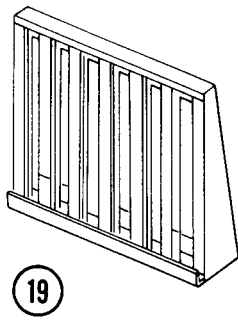
Section II. COMPONENTS OF END ITEM (Cont)

(1) ILLUS NUMBER	(2) NATIONAL STOCK NUMBER	(3) DESCR I PT I ON FSCM AND PART NUMBER	(4) U/M	(5) QTY RQR
7		Cable, Ground (97403) 13225E3274	ft	6
8	6150-01-081-9264	Cable Terminal Box (97403) 13222E6250	ea	1
9	7110-00-216-5334	Chair, Rotary (59177) D-42	ea	1
10	2530-01-216-2575	Chock, Wheel Track (97403) 13225E4710	se	2
11		Corkboard (51745) ADC-2111	ea	1
12	5440-01-152-7751	Ladder, Extension-Folding (39428) 8028T16	ea	1



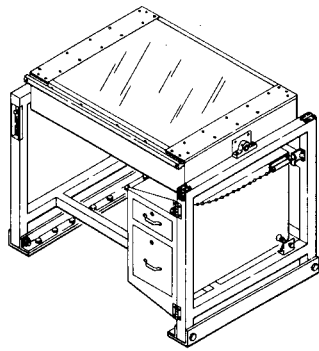
Section II. COMPONENTS OF END ITEM (Cont)

(1) ILLUS NUMBER	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION FSCM AND PART NUMBER	(4) U/M	(5) QTY RQR
13	2540-01-133-9726	Ladder, Vehicle Boarding (97403) 13225E3074	ea	2
14		Lifting, and Tiedown Device, Transportable Shelter: Left Hand (52555) 1390-4	ea	2
15		Lifting and Tiedown Device, Transportable Shelter: Right Hand (52555) 1390-3	ea	2
16	6675-00-999-7254	Pin Register Board (25042) BP-051-0247	ea	1
17		Platemaker, Flip-Top (97403) 13225E4729	ea	1
18	4320-01-098-0156	Pump, Unit, Centrifugal (39428) 9962K11	ea	<b>1</b>

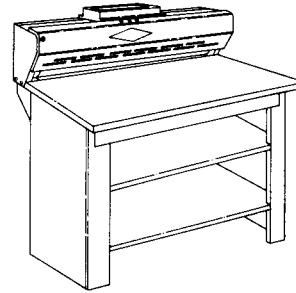


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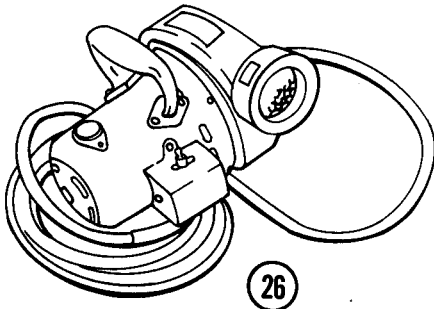
(1) ILLUS NUMBER	(2) NATIONAL STOCK NUMBER	(3) DESCR I PT I ON FSCM AND PART NUMBER	(4) U/M	(5) QTY ROR
19	3610-00-508-0558	Rack, Photol ithographi c Plate (97403) 13325E4723	ea	1
20		Release Stud Assembl y (50153) 11M011	ea	6
21	5975-00-878-3791	Rod, Ground (81348) W-R-550TYI I I CLB	ea	1
22	3610-00-294-6699	Si nk (97403) 13225E4748	ea	1
23	5120-01-013-1676	Slide Hammer, Ground Rod Emplacem ent (45225) P74-144	ea	1



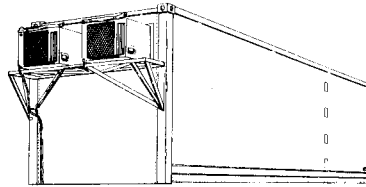
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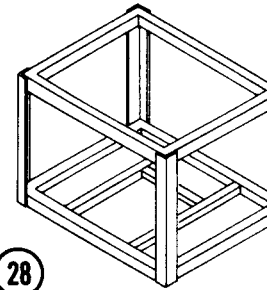
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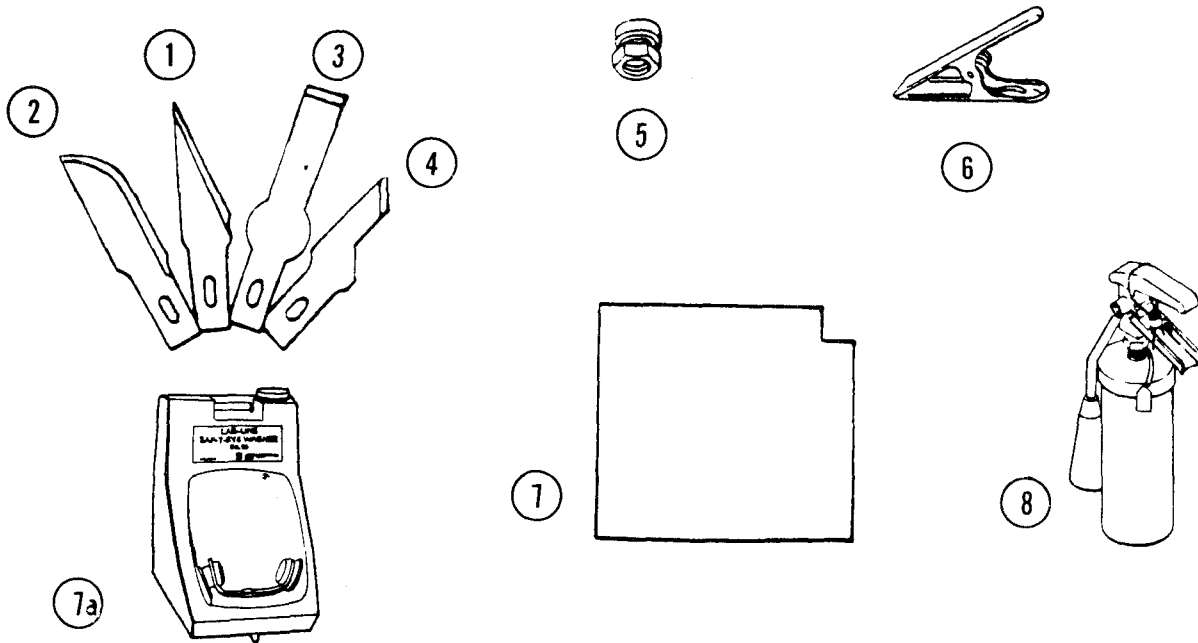
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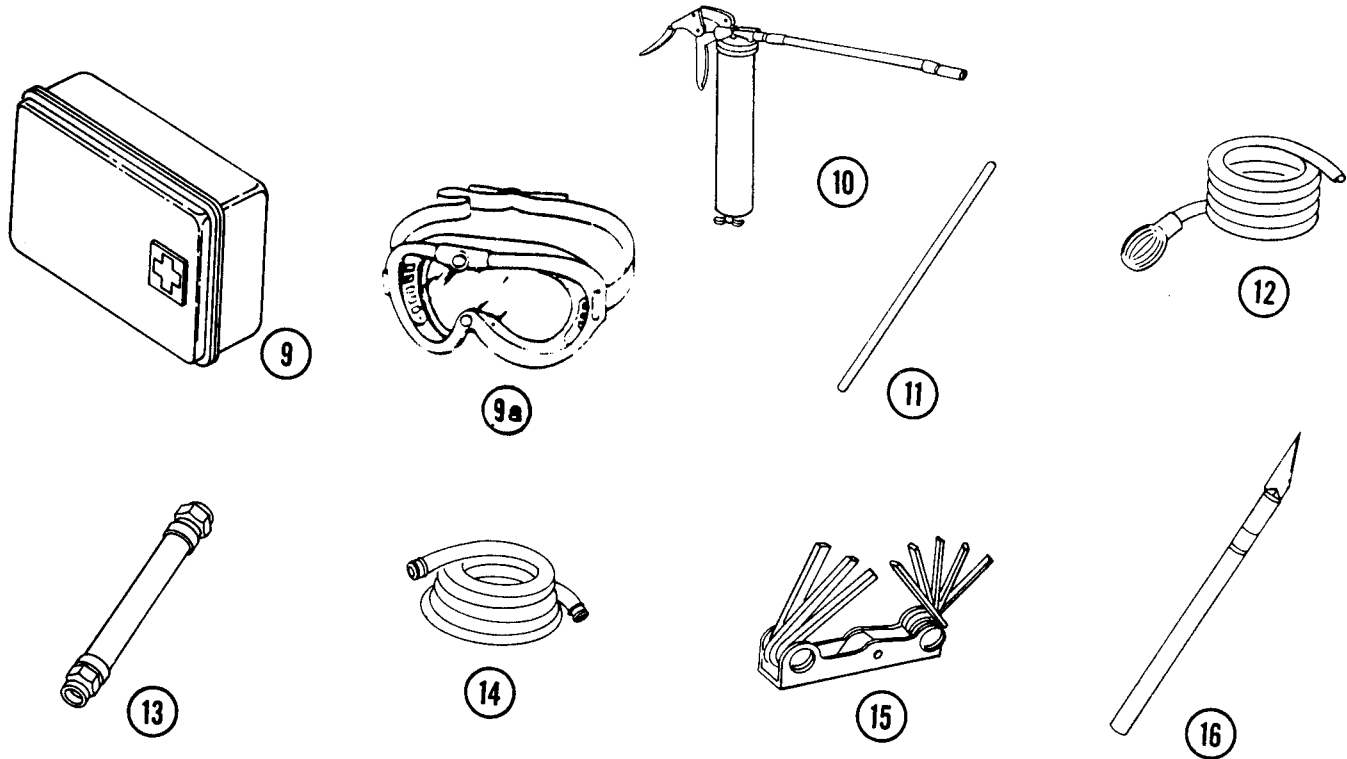
Section II. COMPONENTS OF END ITEM (Cont)

(1) ILLUS NUMBER	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION FSCM AND PART NUMBER	(4) U/M	(5) QTY ROR
24	6675-01-124-3550	Table, Drafting, Scribing/Tracing (97403) 13225E3669	ea	1
25	3610-01-033-7963	Table, Plate Finishing (97403) 13225E4725	ea	2
26	7910-00-205-3400	Vacuum Cleaner, Electric (51745) MVV3400	ea	1
27	3610-01-105-1743	Van, Plate Process Section, Topographic Reproduction Set, Semi-trailer Mounted (51745) ADC-TSS-19	ea	1
28		Base, Cabinet, 10 Drawer (97403) 13225E5158-101	ea	1



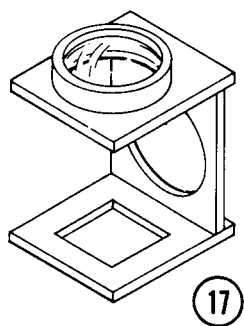
Section III. BASIC ISSUE ITEMS

(1) ILLUS/ ITEM NO.	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION CAGE AND PART NUMBER	(4) U/M	(5) QTY RQR
1	51 10-00-359-6479	Blade, Beveled (99941) 11	pg	2
2	51 10-00-542-2043	Blade, Curved (99941) 10	pg	2
3	5110-00-542-2044	Blade, Square (99941) 17	pg	2
4	5110-00-765-4144	Blade, Stencil (99941) 16	pg	2
5	4730-00-639-9653	Coupling, Hose (20266) 327F	ea	1
6	5120-00-962-7659	Clamp, Hand Spring (12432) 20102	ea	6
7		Drainboard (97403) 13225E5140	ea	1
'a	4240-01-298-931 7	Eyewash Station (95632) 98	ea	1
8	4120-00-555-8837	Extinguisher, Fire (06535) FH-900-2	ea	2



**SECTION III. BASIC ISSUE ITEMS - Cont**

(1) ILLUS/ ITEM NO.	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION CAGE AND PART NUMBER	(4) u/M	(5) QTY RQR
9	6545-00-922-1 200	First Aid Kit (81348) A-A-92	ea	1
9a	4240-00-052-3776	Goggles, industrial (81348) A-A-1110	pr	4
10	4930-00-965-0288	Grease Gun (77335)30-171	ea	1
11		Handle, Socket Wrench (75204)TR5	ea	1
12	4720-00-092-9608	Hose Assembly, 1 1/2 inch x 15 feet long	ea	1
13	4720-00-202-8659	Hose Assembly, Non Metallic	ea	1
14	4720-00-202-6722	Hose Assembly, Non Metallic	ea	3
15		KeySet, Socket Head Screw (70276) 644	se	1
16	5110-00-595-8400	Knife, Craftsman's (99941 ) 3001	ea	2



17



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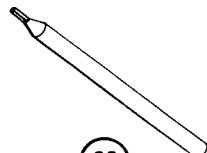
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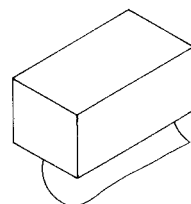
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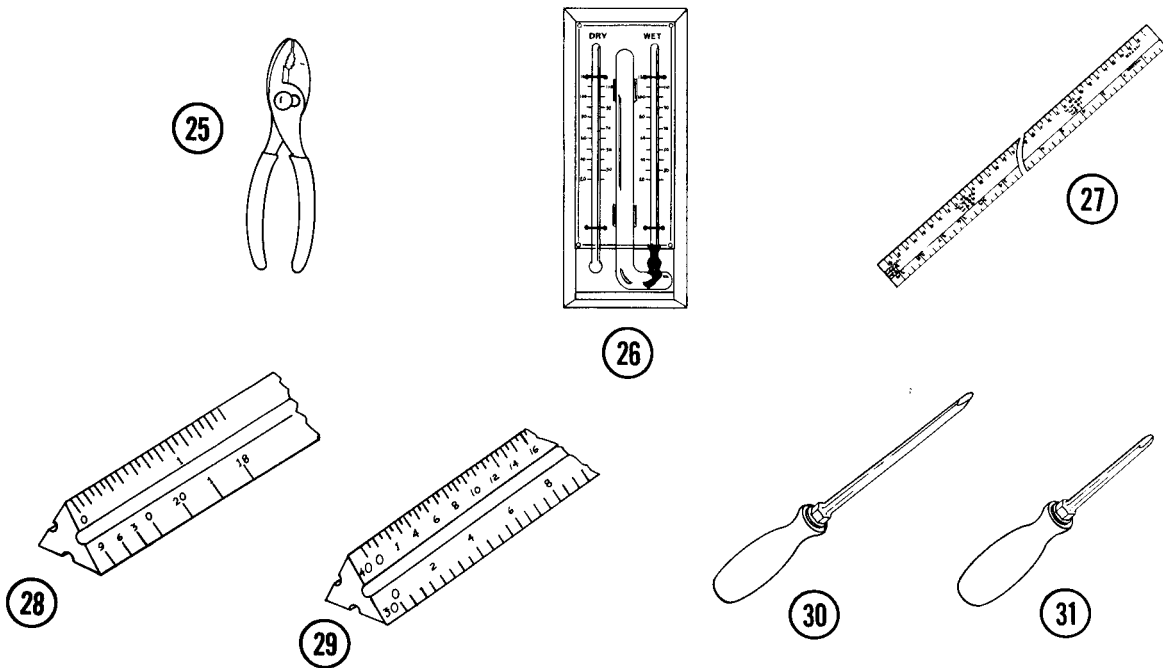
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**Section III. BASIC ISSUE ITEMS (Cont)**

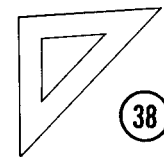
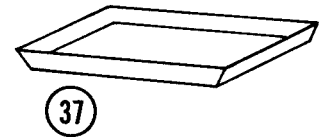
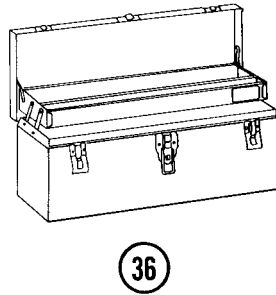
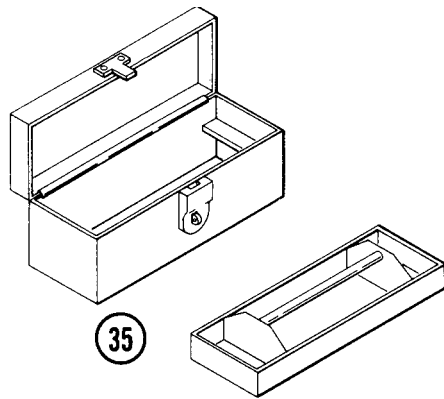
(1) ILLUS NUMBER	(2) NATIONAL STOCK NUMBER	(3) DESCRIP TI ON FSCM AND PART NUMBER	(4) U/M	(5) QTY ROR
17	6650-00-255-8268	Magni fi er (94480) 12-064-10	ea	2
18	5120-00-293-1132	Needl e, Etchi ng, Flat (81349) MI LN43186STYI VSZ1	ea	6
19	5120-00-293-0589	Needl e, Etchi ng, Oval (81349) MI LN43186STYI I I SZ1	ea	6
20	5120-00-293-0591	Needl e, Etchi ng, Round (81349) MI LN43186STYI SZ1	ea	6
21	5120-00-293-0593	Needl e, Etchi ng, Round (81349) MI LN43186STYI SZ2	ea	6
22	5120-00-278-0813	Needl e, Etchi ng, Square (81349) MI LN43186STYI I SZ4	ea	6
23	5340-00-682-1505	Padl ock Set (96906) MS21313-52	se	1
24	4510-00-224-8549	Paper Towel Di spenser (39428) 3017K14	ea	1



Section III. BASIC ISSUE ITEMS (Cont)

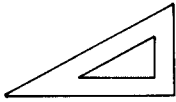
	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION FSCM AND PART NUMBER	(4) U/M	(5) QTY RQR
25	5120-00-223-7396	Pliers, Slip Joint (93389) 276	ea	1
26	6685-00-641-3580	Psychrometer (64467) 314	ea	1
27	5210-00-273-1960	Rule, Steel (57163) C607R-36	ea	1
28	6675-00-234-5099	Scale, Drafting (23366) 240/18	ea	1
29	6675-00-234-5109	Scale, Drafting (23366) 241/24	ea	1
30	5120-00-764-8080	Screwdriver, Cross Tip (28356) SSDP31	ea	1
31	5120-00-764-8102	Screwdriver, Cross Tip (28356) SSDP63	ea	1



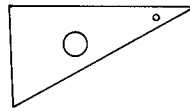


**Section III. BASIC ISSUE ITEMS (Cont)**

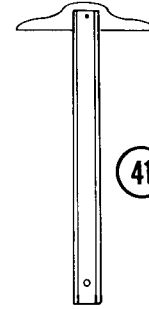
(1) ILLUS NUMBER	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION FSCM AND PART NUMBER	(4) U/M	(5) QTY RQR
32	5120-00-234-8910	Screwdriver, Flat Tip (28356) SSD6	ea	1
33	5110-00-162-2207	Shears, Straight Trimmer's (96508) 22	ea	2
34	6675-01-136-1494	Straightedge (09058) 599-526-60	ea	1
35	5140-00-315-2747	Tool Box (81348) GGGT558-1	ea	1
36	5140-00-331-5496	Tool Box (75206) CS-19	ea	1
37		Tray, Processing Photograph (08215) 2630-3	ea	3
38	6675-00-190-5860	Triangle, Drafting, 12" (88997) A-346	ea	1



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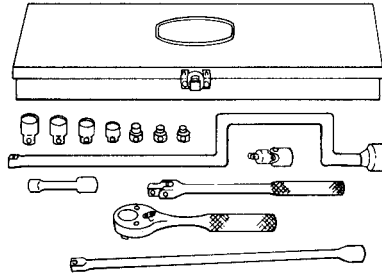
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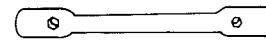
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Section III. BASIC ISSUE ITEMS (Cont)

(1) ILLUS NUMBER	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION FSCM AND PART NUMBER	(4) U/M	(5) QTY RQR
39	6675-00-190-5865	Triangle, Drafting, 15" (88997) A-345	ea	1
40	6675-00-254-4862	Triangle, Drafting (81562) 140511	ea	1
41	6675-00-183-6487	T-Square (81562) 140791	ea	1
42	5120-00-240-5328	Wrench, Adjustable, 8 in. (93389) 708	ea	
43	5120-00-081-2305	Wrench Set, Socket (93389) 5200AB	se	1
44	5120-00-203-6480	Wrench, Socket (75204) TR98	ea	1

**APPENDIX D**

**ADDITIONAL AUTHORIZATION LIST**

**Section I INTRODUCTION**

**D-1. SCOPE.**

This appendix lists additional items you are authorized for the support of the Plate Process Section.

**D-2. GENERAL.**

This list identifies items that do not have to accompany the Plate Process Section and that do not have to be turned in with it. These items are all authorized to you by CTA, MTOE, TDA or JTA.

**D-3. EXPLANATION OF LISTING.**

National stock numbers, descriptions and quantities are provided to help you identify and request the additional items you require to support this equipment. The items are listed in alphabetical sequence by item name under the type document (i.e., CTA, MTOE, TDA, or JTA) which authorizes the item(s) to you.

**Section II ADDITIONAL AUTHORIZATION LIST**

(1) National Stock Number	(2) Description FSCM and Part Number	(3) U/M	(4) Qty Auth
4120-01-075-1753	Air Conditioner, 18,000 Btu	ea	2
6115-00-283-9051	Generator Set, DSL Eng TM:60 kW	ea	1
5805-00-543-0012	Telephone Set: TA-312/PT	ea	1



## APPENDIX E

### Section II. EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST (Cont)

#### Section I. INTRODUCTION

**E-1. SCOPE.** This appendix lists expendable/durable supplies and materials you will need to operate and maintain the Plate Process Section. This listing is for information purposes only and is not authority to requisition the listed items. These items are authorized to you by CTA 50-970, Expendable/Durable Items (except Medical, Class V, Repair Parts and Heraldic Items), or CTA 8-100, Army Medical Department Expendable/Durable Items.

#### E-2. EXPLANATION OF COLUMNS

a. **COLUMN (1): ITEM NUMBER.** This number is assigned to the entry in the listing and is referenced in the narrative instructions to identify the material (e.g., "Use cleaning compound, Item 5, Appendix E.").

b. **COLUMN (2): LEVEL.** This column identifies the lowest level of maintenance that requires the listed item.

<b>C</b>	Operator/Crew
<b>O</b>	Organizational Maintenance
<b>F</b>	Direct Support Maintenance
<b>H</b>	General Support Maintenance

c. **COLUMN (3): NATIONAL STOCK NUMBER.** This is the National stock number assigned to the item. Use it to request or requisition the item.

d. **COLUMN (4): DESCRIPTION.** Indicates the Federal item name and, if required, a description to identify the item. The last line for each item indicates the Federal Supply Code for Manufacturer (FSCM) in parentheses followed by the part number.

e. **COLUMN (5): UNIT OF MEASURE (U/M).** Indicates the measure used in performing the actual maintenance function. This measure is expressed by two-character alphabetical abbreviations (e.g., ea, in., pr). **If** the unit of measure differs from the unit of issue, requisition the lowest unit of issue that will satisfy your requirements.

Section II. EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST (Cont)

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION	(5) U/M
1	C		Adhesive, Spray (21436) 83-5-104571	cn
2	C	8415-00-100-7742	Apron, Laboratory (94480) A4365	bx
3	C	8020-00-262-9099	Brush, Artist's (81348) H-B-1	ea
4	C	8020-00-264-3883	Brush, Artist's (81348) H-B-1	ea
5	C	7920-00-291-5812	Brush, Dusting, Draftsman's (81348) H-B-00190TY3CL2	ea
6	C	7920-00-282-9246	Brush, Wire, Scratch (81348) HB178	ea
7	C	8305-00-222-2423	Cheesecloth (94480) 06-665-17	pk
8	C	8040-00-225-4548	Compound Adhesive Sealing (01139) RTV 102	cn
9	C	8320-00-299-8625	Cotton, Nonsterile, White (81348) JJJ-C-561	pg
10	C	7930-00-530-8067	Detergent, General Purpose	gl
11	C	6750-00-044-3226	Developer, Photographic (33363) 58 2365	gl
12	C	7520-00-285-1772	Dispenser, Tape (81348) GG-D-458TY5CL3	ea
13	C		Eraser, Rubber, Typewriter Ink (79819) 3-852177	gr
14	C	6750-01-025-0541	Film, Photographic, Sensitive Emulsion, Dark Red (33363) 45-3497	sh
15	C		Film, Photographic, Sensitive Emulsion, Rust Color (33363) 45-3537	sh

## Section II. EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST (Cont)

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION	(5) U/M
16	C	3610-00-559-7934	Fluid, Deletion (28174) DLTEFLUIDNR412BA	bt
17	C	7240-00-243-3614	Funnel, Plastic (05668) C-6122-30	ea
18	C		Glass Cleaner, Windex	bt
19	C	8415-00-248-3228	Gloves, Disposable (94480) 11-394 -110B	bx
20	C	6640-00-427-5250	Graduate, Liquid 6138-80	ea
21	C	9150-00-985-7246	Grease, Aircraft Instrument (46031) MIL-G-23827	lb
22	C	6760-00-776-1633	Guide, Sensitivity (03380) 1-21	ea
23	C		Gum Solution (54624) 325	gl
24	C	8520-00-965-2109	Hand Cleaner (06608) 224200-K	pt
25	C	7510-00-285-5866	Lead, Pencil (75364) 2200I-H	pg
26	C	7510-00-295-6170	Lead Repointer (75364) 234	ea
27	C	9150-00-190-0904	Lubricant, Grease GAA	lb
28	O	7220-00-267-4630	Matting, Floor (81349) MIL-M-15562 Type II	ft
29	C	6750-00-264-6763	Opaque, Photographic, Black (19139) 146 4312	jr
30	C	6750-00-264-6764	Opaque, Photographic, Red (19139) 146 4296	jr
31	C	3610-00-864-5585	Pad, Lithographic (81349) MIL-P-43296	bx

## Section II. EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST (Cont)

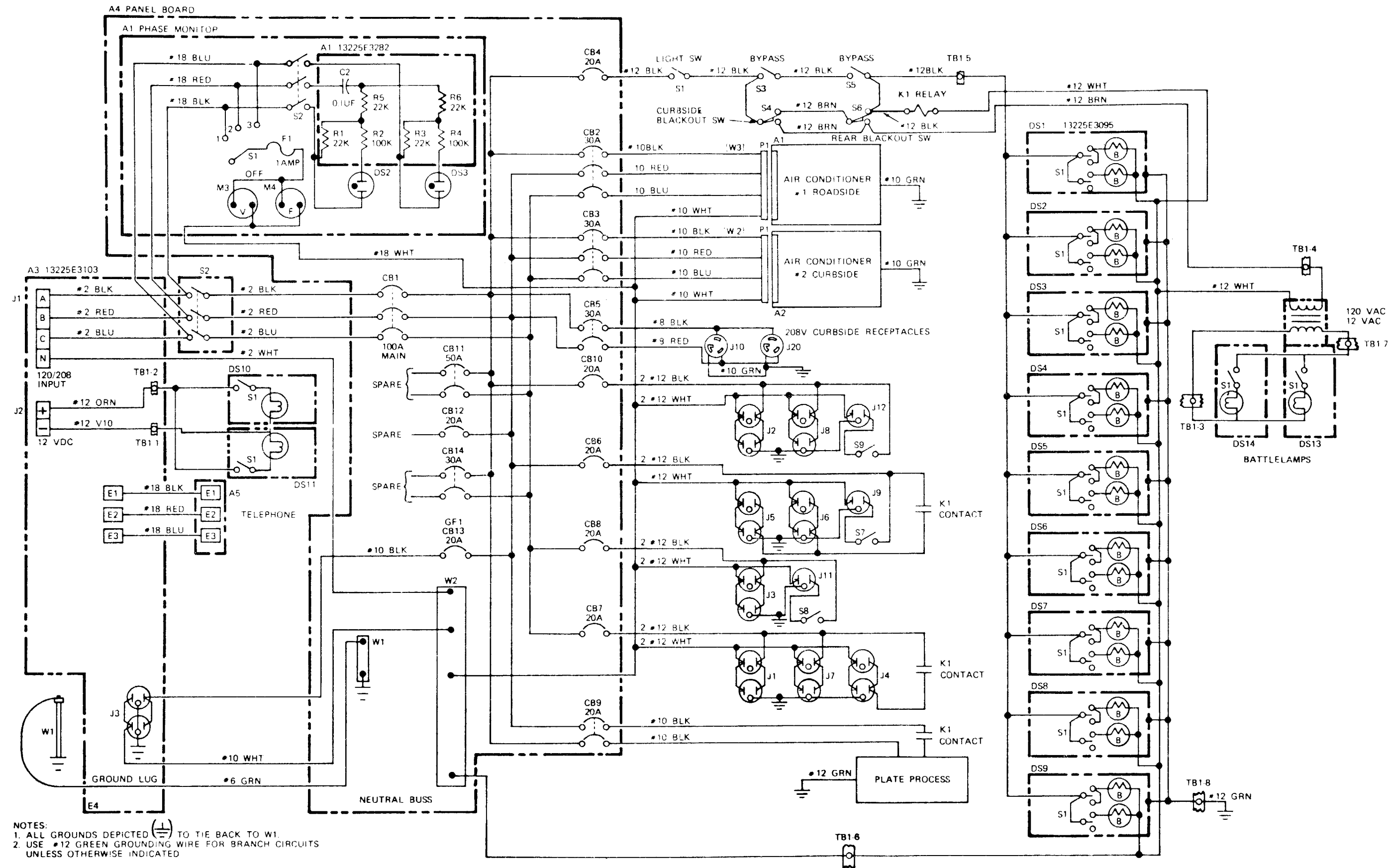
(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION	(5) U/M
32	C	7240-00-060-6006	Pail, Utility, Plastic (05668) C-6270-10	ea
33			Paper Roll, Kraft (93791) VH310	rl
34	C	5350-00-235-0137	Paper, Abrasive (81352) A-A-1202	pg
35	C	8010-00-068-8779	Paint, Olive Drab (81352) MIL-L-81348	gl
36	C		Pen, Broad Felt-Tip, Opaque, Red (04457) Dalomarker Point Number 5	bx
37	C		Pen, Fine Felt-Tip, Opaque, Red (04457) Dalomarker Point Number 2	bx
38	C	7510-00-240-1526	Pencil, Surface Marking (81348) SS-P-196	dz
39	C	7520-00-222-1250	Pencil, Mechanical, Nonautomatic (75364) 5611	ea
40	C		Pin, Register, Oblong (25042) 04325110	ea
41	C		Pin, Register, Round (25042) 04250110	ea
42	C	9330-00-579-6216	Plastic Sheet, Unsensitized, Scribe Coat (33363) 44-3147	sh
43	C	9330-00-202-4496	Plastic Sheet, Vinyl Chloride Acetate (81348) L-P-535	sh
44	C	5350-00-161-9034	Pumice, Technical (94480) P-363	cn
45	C		Rope, Cotton (242176)	rl
46	C	7520-00-162-6178	Sharpener, Pencil (81348) GG-S-236	ea



## Section II. EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST (Cont)

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION	(5) U/M
47	C	7920-00-240-2555	Sponge, Cellulose (81348) L-S-626	ea
48	C	5345-00-265-3126	Stone, Sharpening (81348) HM-8	ea
49	C	6810-00-270-9990	Talc, Technical (81348) ZZT416	cn
50	O	5970-00-926-7218	Tape, Insulating, Electrical	ro
51	C	7510-00-051-1171	Tape, Pressure Sensitive Adhesive (76381) 616	ro
52	C	7510-00-285-6403	Tape, Pressure Sensitive Adhesive (81349) MIL-T-40620	ro
53	C	7510-00-551-9823	Tape, Pressure Sensitive Adhesive (81348) L-T-90	ro
54	C	7920-00-823-9772	Towel, Paper (81348) UU-T-595	bx
55	C	8540-00-262-7178	Towel, Paper (81348)	bx
56	C	6740-00-224-9679	Tray, Processing (08215) 2228-3	ea
57	C	7240-00-965-4427	Waste Receptacle (81348) L-W-25	ea
58	C		Tape, Pressure Sensitive Adhesive Double Faced (88744) 58-1582	ro
59	C		Solvent, Nonflammable Flushing AH255	cn
60	C	6850-00-880-1003	Spray, Silicone	ea





NOTES:  
 1. ALL GROUNDS DEPICTED (⏏) TO TIE BACK TO W1.  
 2. USE #12 GREEN GROUNDING WIRE FOR BRANCH CIRCUITS UNLESS OTHERWISE INDICATED

FO-1. Plate Process Schematic  
 FP-1/(FP-2 blank)

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**By Order of the Secretary of the Army:**

**JOHN A. WICKHAM, JR.**  
*General, United States Army*  
*Chief of Staff*

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6	2-1 a		
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IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:

In line 6 of paragraph 2-1a the manual states the engine has 6 Cylinders. The engine on my set only has 4 Cylinders. Change the manual to show 4 Cylinders.

Callout 16 on figure 4-3 is pointing at a bolt. In key to figure 4-3, item 16 is called a shim - Please correct one or the other.

I ordered a gasket, item 19 on figure B-16 by NSN 2 910-00-762-3001. I got a gasket but it doesn't fit. Supply says I got what I ordered, so the NSN is wrong. Please give me a good NSN

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TEAR ALONG PERFORATED LINE

# The Metric System and Equivalents

## Linear Measure

1 centimeter = 10 millimeters = .39 inch  
 1 decimeter = 10 centimeters = 3.94 inches  
 1 meter = 10 decimeters = 39.37 inches  
 1 dekameter = 10 meters = 32.8 feet  
 1 hectometer = 10 dekameters = 328.08 feet  
 1 kilometer = 10 hectometers = 3,280.8 feet

## Weights

1 centigram = 10 milligrams = .15 grain  
 1 decigram = 10 centigrams = 1.54 grains  
 1 gram = 10 decigram = .035 ounce  
 1 dekagram = 10 grams = .35 ounce  
 1 hectogram = 10 dekagrams = 3.52 ounces  
 1 kilogram = 10 hectograms = 2.2 pounds  
 1 quintal = 100 kilograms = 220.46 pounds  
 1 metric ton = 10 quintals = 1.1 short tons

## Liquid Measure

1 centiliter = 10 milliliters = .34 fl. ounce  
 1 deciliter = 10 centiliters = 3.38 fl. ounces  
 1 liter = 10 deciliters = 33.81 fl. ounces  
 1 dekaliter = 10 liters = 2.64 gallons  
 1 hectoliter = 10 dekaliters = 26.42 gallons  
 1 kiloliter = 10 hectoliters = 264.18 gallons

## Square Measure

1 sq. centimeter = 100 sq. millimeters = .155 sq. inch  
 1 sq. decimeter = 100 sq. centimeters = 15.5 sq. inches  
 1 sq. meter (centare) = 100 sq. decimeters = 10.76 sq. feet  
 1 sq. dekameter (are) = 100 sq. meters = 1,076.4 sq. feet  
 1 sq. hectometer (hectare) = 100 sq. dekameters = 2.47 acres  
 1 sq. kilometer = 100 sq. hectometers = .386 sq. mile

## Cubic Measure

1 cu. centimeter = 1000 cu. millimeters = .06 cu. inch  
 1 cu. decimeter = 1000 cu. centimeters = 61.02 cu. inches  
 1 cu. meter = 1000 cu. decimeters = 35.31 cu. feet

## Approximate Conversion Factors

To change	To	Multiply by	To change	To	Multiply by
inches	centimeters	2.540	ounce-inches	newton-meters	.007062
feet	meters	.305	centimeters	inches	.394
yards	meters	.914	meters	feet	3.280
miles	kilometers	1.609	meters	yards	1.094
square inches	square centimeters	6.451	kilometers	miles	.621
square feet	square meters	.093	square centimeters	square inches	.155
square yards	square meters	.836	square meters	square feet	10.764
square miles	square kilometers	2.590	square meters	square yards	1.196
acres	square hectometers	.405	square kilometers	square miles	.386
cubic feet	cubic meters	.028	square hectometers	acres	2.471
cubic yards	cubic meters	.765	cubic meters	cubic feet	35.315
fluid ounces	milliliters	29.573	cubic meters	cubic yards	1.308
pints	liters	.473	milliliters	fluid ounces	.034
quarts	liters	.946	liters	pints	2.113
gallons	liters	3.785	liters	quarts	1.057
ounces	grams	28.349	liters	gallons	.264
pounds	kilograms	.454	grams	ounces	.035
short tons	metric tons	.907	kilograms	pounds	2.205
pound-feet	newton-meters	1.356	metric tons	short tons	1.102
pound-inches	newton-meters	.11296			

## Temperature (Exact)

°F Fahrenheit temperature      5/9 (after subtracting 32)      Celsius temperature      °C

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